

Thad Starner

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EDUCATIONAL BACKGROUND

Degree	Year	University	Field
Ph.D.	1999	Massachusetts Institute of Technology, Cambridge, MA., USA.	<i>Media Arts & Sciences</i>
S.M.	1995	Massachusetts Institute of Technology, Cambridge, MA., USA.	<i>Media Arts & Sciences</i>
B.S.	1991	Massachusetts Institute of Technology, Cambridge, MA., USA.	<i>Computer Science</i>
B.S.	1991	Massachusetts Institute of Technology, Cambridge, MA., USA.	<i>Brain and Cognitive Science</i>

EMPLOYMENT HISTORY

Title	Organization	Years
Professor	School of Interactive Computing, Georgia Institute of Technology, Atlanta, GA, USA	<i>2013-present</i>
Staff Research Scientist	Research & Machine Intelligence, Google, Inc., Mountain View, CA, USA	<i>2018-present</i>
Technical Lead/Manager	[X], Aura, & Hardware, Google, Inc., Mountain View, CA, USA	<i>2010-2018</i>
Visiting Professor	TZI, Universität Bremen, Bremen, Germany	<i>2009</i>
Associate Professor	School of Interactive Computing, Georgia Institute of Technology	<i>2006-2013</i>
Visiting Professor	Electrical and Computer Engineering, Swiss Federal Institute of Technology (ETH), Zurich, Switzerland	<i>2002</i>
Founder & CTO	Charmed, Inc. Santa Monica, CA	<i>1999-2003</i>
Assistant Professor	College of Computing Georgia Institute of Technology,	<i>1999-2006</i>
Research Assistant	Media Laboratory, Perceptual Computing, Massachusetts Institute of Technology, Cambridge, MA., USA.	<i>1993-1999</i>
Associate Scientist	Speech Systems Group, BBN, Cambridge, MA., USA	<i>1992-1993</i>
Undergraduate Research Assistant	Media Laboratory, Perceptual Computing, Massachusetts Institute of Technology, Cambridge, MA., USA.	<i>1989-1991</i>
Research Programmer	Design Plus, Inc., York, PA., USA	<i>Summer 1987, 1988</i>

CURRENT FIELDS OF INTEREST

My group's research interests include Wearable and Ubiquitous Computing, Artificial Intelligence, Pattern Recognition and Discovery, and Enabling Technology for those with disabilities. We develop mobile computing techniques for supporting users while they are on-the-go or engaged in face-to-face conversation. Our research relies on pattern recognition techniques and mobile interface design for creating interfaces for use in everyday mobile environments, and we use formal user studies for evaluation. Our work influences commercial products, the most notable example being Google's Glass.

A long term focus is Symbiotic Intelligence, an approach to Artificial Intelligence where the computer learns about human interactions in the world through discovering patterns in a user's everyday behavior. We use motion sensors, microphones, cameras, and brain interfaces to understand the user's context and infer knowledge about the world and the user.

We leverage our knowledge of machine learning and human computer interface to create enabling technology for the Deaf community and people with disabilities. Our long-term research efforts, such as developing a phrase-level American Sign Language recognition system, focus on practical tasks that have the potential for meaningful change. For example, our educational game CopyCat uses sign language recognition to help deaf children of hearing parents develop memory and language skills. Lack of these skills correlates with physical abuse, poor mental health, and low educational and career outcomes. Our work on Passive Haptic Learning and Rehabilitation helps wearers learn new manual tasks, such as text entry, and recover from stroke and traumatic injuries.

I. TEACHING

A. Courses Taught

Quarter/Year	Course Number & Title	Number of Reg. Students	Comments
College of Computing, Georgia Institute of Technology			
Winter 1999	CS 4495/7321 Low Level Computer Vision	9	
Spring 1999	CS 4803/8113 Mobile and Ubiquitous Computing (with Gregory Abowd)	33	New
Fall 1999	CS 4495/7495 Computer Vision	17	
Spring 2000	CS 7470 Mobile and Ubiquitous Computing (with Elizabeth Mynatt)	35	
Fall 2000	CS 4495/7495 Computer Vision (with Aaron Bobick)	28	
Spring 2001	CS 7470 Mobile and Ubiquitous Computing	18	
Fall 2001	CS 4600 Introduction to Intelligent Systems	36	
Spring 2002	CS 4600 Introduction to Intelligent Systems	53	
Spring 2003	CS 4600 Introduction to Intelligent Systems	59	
Spring 2003	CS 4803H/8803D Wearable Computing	16	New
Spring 2004	CS 4600 Introduction to Intelligent Systems	69	
Fall 2004	CS 3600 Introduction to Intelligent Systems	66	
Fall 2004	CS 7470 Ubiquitous Computing	26	
Fall 2005	CS 3600 Introduction to Intelligent Systems	69	
Spring 2006	CS 3600 Introduction to Intelligent Systems	55	
Fall 2006	CS 4605/7470 Mobile and Ubiquitous Computing	33	

Quarter/Year	Course Number & Title	Number of Reg. Students	Comments
Spring 2007	CS 3600 Introduction to Intelligent Systems	36	
Fall 2007	CS 4605/7470 Mobile and Ubiquitous Computing	40	
Spring 2008	CS 3600 Introduction to Intelligent Systems	60	
Fall 2008	CS 4605/7470 Mobile and Ubiquitous Computing	60	
Fall 2009	CS 3600 Artificial Intelligence	62	
Spring 2010	CS 3651 Prototyping Intelligent Appliances	26	New
Summer 2010	CS 3651 Prototyping Intelligent Appliances	7	Flipped classroom
Spring 2012	CS 6601 Grad. Artificial Intelligence (with Frank Dellaert)	40	
Fall 2012	CS 6601 Grad. Artificial Intelligence	50	
Spring 2013	CS 3651 Prototyping Intelligent Appliances	30	Flipped classroom
Spring 2013	CS 4605/7470 Mobile and Ubiquitous Computing (with Gregory Abowd and Clint Zeagler)	80	
Fall 2013	CS 6601 Grad. Artificial Intelligence	39	
Spring 2014	CS 4605/7470 Mobile and Ubiquitous Computing (with Clint Zeagler)	84	
Fall 2014	CS 6601 Grad. Artificial Intelligence	66	Flipped classroom
Spring 2015	CS 7470 Mobile and Ubiquitous Computing	31	
Fall 2015	CS 6601 Grad. Artificial Intelligence	59	
Spring 2016	CS 4605/7470 ID 4823/8900 Mobile and Ubiquitous Computing (with Clint Zeagler)	51	
Spring 2016	OMSCS 6601 Grad. Artificial Intelligence	153	New
Fall 2016	CS 6601 Grad. Artificial Intelligence	80	
Fall 2016	OMSCS 6601 Grad. Artificial Intelligence	245	
Spring 2017	CS 3651 Prototyping Intelligent Appliances	31	
Spring 2017	OMSCS 6601 Grad. Artificial Intelligence	254	
Fall 2017	CS 6601 Grad. Artificial Intelligence	96	
Fall 2017	OMSCS 6601 Grad. Artificial Intelligence	255	
Spring 2018	CS 3651 Prototyping Intelligent Appliances	30	
Spring 2018	OMSCS 6601 Grad. Artificial Intelligence	269	
Fall 2018	CS 6601 Grad. Artificial Intelligence	118	
Fall 2018	OMSCS 6601 Grad. Artificial Intelligence	298	
Spring 2019	CS 3651 Prototyping Intelligent Appliances	30	
Spring 2019	OMSCS 6601 Grad. Artificial Intelligence	590	

Seminars

Jan. 1994	3D Computer Graphics (intensive short course)	50	MIT IAP
Jan. 1995	3D Computer Graphics (intensive short course)	50	MIT IAP
Jan. 1996	3D Computer Graphics (intensive short course)	50	MIT IAP
Jan. 1996	Wearable Computing (lecture series)	30	MIT IAP
Jan. 1997	Wearable Computing (lecture series)	30	MIT IAP
Jan. 1997	Finding Academic Funding (invited lecturers)	20	MIT IAP
Fall 2000	CS 4801 Building Mobile and Ubiquitous Computers (with Cory Kidd)	10	Georgia Tech
Fall 2003	CS 1801 Freshman Seminar	20	Georgia Tech
Fall 2005	CS 1100 Freshman Seminar	13	Georgia Tech
Fall 2006	CS 1100 Freshman Seminar	20	Georgia Tech
Spring 2007	CS 4980 Building Ubiquitous Devices	16	Georgia Tech
Fall 2008	CS 1100 Freshman Seminar	23	Georgia Tech
Summer 2015	Activity Recognition Reading group	8	Google & GT
Summer 2016	Activity Recognition Reading group	8	Google & GT
Summer 2017	Activity Recognition Reading group	10	Google & GT
Summer 2018	Activity Recognition Reading group	10	Google & GT

B. Curriculum Development

Udacity Artificial Intelligence Nanodegree (2017): Udacity chose OMSCS 6601 (see below) as the basis for their AI nanodegree program.

OMSCS 6601: Artificial Intelligence (2016): Graduate adaptation of 6601 to the OMSCS format. Created the class Summer and Fall 2015 and began running the class Spring 2016. Combines lectures from the original Udacity AI class with Thrun and Norvig with the best lectures from my on-campus class. Coordinated guest appearances by Sebastian Thrun and Peter Norvig. Based on research into best practices with MOOCS and lessons from the 2014 ACM Learning at Scale conference, created a format where students are presented a “challenge question” at the beginning of each lesson to give a preview of what they will be learning. In Fall 2016 combined with on-campus class testing additional weekly challenge questions live and then presenting the refined questions on Piazza.

CS 4605/7470: Mobile and Ubiquitous Computing (1999-present): Graduate and undergraduate course introduced by Gregory Abowd and Thad Starner. Provides an introduction to the fundamental challenges of ubiquitous computing. Encourages students to examine every aspect of the field and research two topics deeply. In Spring 2001, a more intimate version of the course encouraged one on one interaction, urged deep research, and rewarded creativity and inventiveness. In Fall 2004, student projects resulted in ten paper submissions to various conferences, with seven acceptances. By Spring 2013 the class served approximately 100 students as it is jointly held with an Industrial Design course. The class emphasizes group collaborative projects between ID and CS. A class project “Captioning on Glass” won the Connected Home and People’s Choice Awards at the Spring 2014 Convergence Innovation Competition. In 2015 procured 30 Google Glass devices (with prescription lenses if necessary for the student) for class projects.

CS 3651/4801 Prototyping Intelligent Appliances/Building Ubiquitous Devices (2000, 2007-2010, 2013-present): This class emphasizes hands-on experience and was developed originally for early undergraduates and graduates (not registered) who desire to develop their rapid prototyping skills. The class uses continuous in-class individual and team projects to teach. Lectures released on YouTube allow students to learn circuit theory and basic tool operation before coming to class. Class time is spent creating “skill demonstration” prototypes under the guidance of “master makers” who teach the practical skills and intuition often lacking from modern undergraduate classes that rely on simulation to teach higher level concepts.

CS 3600/4600 Introduction to Intelligent Systems (2001-2009) CS3600 is the introductory AI course at Georgia Tech. The updated course aims to attract juniors and ambitious sophomores to encourage future enrollment in the more advanced IS classes. The Spring 2002 enrollment began to reflect this effort. Presentation of course material encourages continued exploration through UROCs by pairing the book chapters with the research interests of current Georgia Tech faculty. In 2003, redesigned the course to include more numerical methods, reflecting an update in the new edition of the Russell and Norvig text. Course project in game playing (Isolation) has been adopted by Vanderbilt.

CS 1801/1100 Freshman Seminar (2003-2008): A joint effort of a team of faculty led by Merrick Furst, the freshman seminar aims to improve retention of incoming computer science students by exposure to interesting research and by demonstrating the application of their classes to real-world problems. The class alternates between large lectures with the college’s freshman class and 20 person interactive sessions based on current events in computer science.

CS 4803H/8803D Wearable Computing (2003): Developed a new graduate and undergraduate course that challenges students to examine wearable computing from every aspect: physics, systems,

psychophysics, networking, HCI, and social issues. Student projects examined the current literature and developed research methodologies to extend knowledge in the field. One such project led to a highly reviewed paper in CHI2004. Merged with CS7470 to create a new course for undergraduate curriculum Fall 2006.

CS 4495/7495 Computer Vision (1999-2000): Computer Vision was re-developed for semesters integrating the content from the previous Low and High Level Computer Vision courses. The first semester emphasized fundamentals followed by higher level techniques as developed in the current literature. The second semester, co-taught with Aaron Bobick, concentrated on image processing. Students were encouraged, with good success, to develop class projects that could be submitted to full conferences.

C. Individual Student Guidance

Post-Doctoral Fellows

Kwang-Hyun “Joseph” Park (CoC)

Spring 2004 - Spring 2005.

Publications: *D.3.26.*

Research on gestural communication.

Research scientist at KIST (research laboratory), Korea

Kent Lyons (CoC)

Fall 2005-Spring 2007.

Publications: *D.3.10, D.9.2, D.3.12, D.2.18, D.2.25, D.2.28, D.2.30, D.3.18, D.2.31, D.3.23, D.2.33, D.2.35, D.4.1, D.3.27, B.13, D.9.15 C.2.11 .*

Research on interfaces for face to face conversation.

Research scientist at HP, Nokia, Yahoo Research.

Helene Brashear (CoC)

Fall 2010-Fall 2011.

Publications: *D.2.22, D.2.24, D.3.19, D.3.22, D.3.24, D.3.25 .*

Research on American Sign Language interfaces.

CEO Tin Man Labs, Inc.

Ph.D. Students Supervised (in process as well as graduated)

Kent Lyons (CoC)

Spring 2002-Summer 2005.

Publications: *See above.*

Dissertation “Improving Support of Conversations by Enhancing Mobile Computer Input” completed May 2005.

Research scientist at HP, Nokia, Yahoo Research, and Technicolor.

David Minnen (CoC, with Professor Irfan Essa)

Fall 2001 - Summer 2008.

Publications: *D.2.17, B.10, D.2.21, D.2.32 .*

*Dissertation “Unsupervised Discovery of Activity Primitives from Multivariate Sensor Data” completed August 2008. Awarded Georgia Tech Presidential Fellowship. **Awarded NSF Graduate Student Fellowship 2002 - 2005.***

Director of computer vision research at Oblong, Inc. Google Research.

Daniel Ashbrook (CoC)

Fall 2005-Fall 2009.

Publications: *D.2.16, D.3.16, D.2.19, B.11, D.2.30, D.3.21* .

Dissertation "Enabling Mobile Microinteractions" completed December 2009. SAIC Best Student Paper Award for "Learning Significant Locations and Predicting User Movement with GPS." Awarded Georgia Tech Presidential Fellowship.

Research scientist at Nokia & Samsung. Assistant Professor at RIT.

Tracy Westeyn (CoC, with Professor Gregory Abowd)

Spring 2002-Spring 2010.

Publications: *B.10, D.2.24, D.3.20, D.2.34, D.3.26* .

Dissertation "Child's Play: activity recognition for monitoring children's developmental progress with augmented toys" completed May 2010. ACM Best Paper 2012. Google Anita Borg Fellow.

Government research scientist.

Valerie Henderson Summet (CoC)

Fall 2003-Spring 2010.

Publications: *D.3.19, D.3.22, D.3.24, D.3.25* .

Dissertation "Facilitating Communication for Deaf Individuals with Mobile Technologies" completed May 2010. Awarded Georgia Tech Presidential Fellowship. Google Anita Borg Fellowship Finalist. Awarded NSF Graduate Student Fellowship 2004 - 2007.

Lecturer, Emory University. Assistant Professor, Rollins College.

Pei Yin (CoC, with Professors Jim Rehg and Irfan Essa)

Fall 2007-Spring 2010.

Dissertation "Segmental Discriminative Analysis for American Sign Language Recognition and Verification" completed May 2010.

Software engineer, Microsoft, Google, Pinterest. Engineering Manager Facebook.

Helene Brashear (CoC)

Spring 2001-Summer 2010

Publications: *See above.*

Dissertation "Improving the Efficacy of Automated Sign Language Practice Tools" completed August 2010. Google Anita Borg Fellow.

President and founder Tin Man Labs, Inc. Data Scientist W2O Group.

SeungYon Lee (CoC)

Fall 2005-Fall 2010.

Publications: *D.3.22, D.3.24, D.3.25* .

Dissertation "Buzzwear: supporting multitasking with wearable tactile displays on the wrist" completed December 2010.

Research scientist HP & Google.

LTC Tanya (Markow) Estes (CoC, with Debbie Backus)

Summer 2009-Spring 2012.

Publications: *D.3.22, D.3.24, D.3.25* .

Dissertation "Mobile Music Touch: using haptic stimulation for passive rehabilitation and learning" completed May 2012.

Associate Professor at United States Military Academy (West Point).

James Clawson (CoC)

Fall 2005-Fall 2012.

Dissertation "On-the-go Text Entry: evaluating and improving mobile text input on mini-qwerty keyboards" completed November 2012.

Assistant Professor Indiana University Bloomington.

Hannes Baumann (TZI, Universität Bremen, with Professor Michael Lawo)

Spring 2009-Fall 2012.

Dissertation “Order Picking Supported by Mobile Computing” completed December 2012.

Research scientist Universität Bremen & Ubimax.

Kimberly (Weaver) Xu (CoC)

Fall 2008-Spring 2013.

Dissertation “Facilitating American Sign Language Learning for Hearing Parents of Deaf Children via Mobile Devices” completed April 2013.

Research scientist Tin Man Labs. Lecturer at University of Alabama, Huntsville.

Zahoor Zafrulla (CoC)

Fall 2008-Spring 2014.

Dissertation “Automatic Recognition of American Sign Language Classifiers” completed May 2014.

Computer Vision/Machine Learning Scientist BrightSky Labs. Algorithms and Data Science Engineer at Nauto.

Daniel Kohlsdorf (CoC)

Summer 2012-Summer 2015.

Dissertation “Data Mining in Large Audio Collections of Dolphin Signals” completed August 2015.

Xing.

LTC Malcolm Haynes (CoC)

Fall 2015-Summer 2017.

Dissertation “Lateral Positioning of a Monocular Head-worn Display” completed July 2017.

Assistant Professor at United States Military Academy (West Point).

Caitlyn Seim (CoC)

Fall 2013-present.

Awarded NSF Graduate Student Fellowship 2014. MSR Fellowship 2017. 2nd place Get-a-move-on hack-a-thon for Passive Haptic Learning of Dance 2018. Diversity Inclusive Excellence Award 2018. Foley Scholar Award 2018. Stanford Neuroscience Translate grant 2019.

Research on Passive Haptic Learning/Rehabilitation.

Stefano Fenu (CoC, with Chris Rozell)

Fall 2015-present.

Research on pattern discovery.

Ceara Byrne (CoC, with Melody Jackson)

Spring 2018-present.

Research on dog-centered computing.

India Irish (CoC, with Rosa Arriaga)

Fall 2018-present.

Research on technologies for deaf education.

Nivedita Arora (CoC, with Gregory Abowd)

Fall 2018-present.

Research on self-powered computational materials.

Ph.D. Students Thesis Committees

- Jennifer Ockerman, Department of ISYE, College of Engineering, Georgia Tech, July 2000.
Thesis Title: "Task Guidance Systems."
Principal Advisor: Dr. Amy Pritchett.
- Darnell Moore, Department of ECE, College of Engineering, Georgia Tech, July 2000.
Thesis Title: "Vision-Based Recognition of Action Using Context."
Principal Advisor: Dr. Irfan Essa and Dr. Monson Hayes III
- Zachary Wartell, College of Computing, Georgia Tech, July 2001.
Thesis Title: "Characterizing image fusion techniques in stereoscopic HTDs."
Principal Advisor: Dr. Larry Hodges
- Rawesak Tanawongsuwan, College of Computing, Georgia Tech, December 2003.
Thesis Title: "Impact of speed variations in gait recognition."
Principal Advisor: Dr. Aaron Bobick
- Kyeong Keol Ryu, Department of ECE, College of Engineering, Georgia Tech, June 2004.
Thesis Title: "Automated Bus Generation for Multi-Processor SOC Design."
Principal Advisor: Dr. Vincent J. Mooney III
- David Krum, College of Computing, Georgia Tech, December 2004.
Thesis Title: "Wearable computers and spatial cognition."
Principal Advisor: Dr. William Ribarsky
- Gillian Hayes, College of Computing, August 2007.
Thesis Title: "Documenting and Understanding Everyday Activities through the Selective Archiving of Live Experiences."
Principal Advisor: Dr. Gregory Abowd
- Eric Martinson, College of Computing, December 2007.
Thesis Title: "Acoustical awareness for intelligent robotic control."
Principal Advisor: Dr. Ronald Arkin
- Adam Feldman, School of Interactive Computing, College of Computing, Georgia Tech, August 2008.
Thesis Title: "Using observations to recognize the behavior of interacting multi-agent systems"
Principal Advisor: Dr. Tucker Balch.
- Shwetak Patel, School of Interactive Computing, College of Computing, Georgia Tech, August 2008.
Thesis Title: "Infrastructure Mediated Sensing"
Principal Advisor: Dr. Gregory Abowd.
- Chip Mappus, School of Interactive Computing, College of Computing, Georgia Tech, December 2009.
Thesis Title: "Estimating the discriminative power of time varying features for EEG BMI"
Principal Advisor: Dr. Charles Isbell.
- Ping Wang, School of Interactive Computing, College of Computing, Georgia Tech, August 2010.
Thesis Title: "Social game retrieval from unstructured videos"
Principal Advisor: Dr. James Rehg.
- Howard Zhou, School of Interactive Computing, College of Computing, Georgia Tech, August 2010.
Thesis Title: "An Exemplar-based approach to search-assisted computer-aided diagnosis of pigmented skin lesions"
Principal Advisor: Dr. James Rehg.

- Kihwan Kim, School of Interactive Computing, College of Computing, Georgia Tech, December 2011.
Thesis Title: "Spatio-temporal data interpolation for dynamic scene analysis"
Principal Advisor: Dr. Irfan Essa.
- Alireza Fathi, School of Interactive Computing, College of Computing, Georgia Tech, August 2013.
Thesis Title: "Learning descriptive models of objects and activities from egocentric video"
Principal Advisor: Dr. James Rehg.
- Edison Thomasz, School of Interactive Computing, College of Computing, Georgia Tech, December 2015.
Thesis Title: "Interactive Activity Recognition for Practical Food Journaling"
Principal Advisor: Dr. Gregory Abowd and Dr. Irfan Essa
- Vinay Bettadapura, School of Interactive Computing, College of Computing, Georgia Tech, December 2015.
Thesis Title: "Leveraging contextual cues for dynamic scene understanding"
Principal Advisor: Dr. Irfan Essa
- Temiloluwa Olubanjo, Department of ECE, College of Engineering, Georgia Tech, December 2016.
Thesis Title: "Towards Automatic Food Intake Monitoring Using Wearable Sensor-based Systems"
Principal Advisor: Dr. Maysam Ghovanloo
- Aman Parnami, School of Interactive Computing, College of Computing, Georgia Tech, May 2017.
Thesis Title: "Enabling Motion-based Gestural Interaction Design"
Principal Advisor: Dr. Gregory Abowd and Dr. Betsy DiSalvo
- Joelle Alcaidinho, College of Computing, Georgia Tech, May 2017.
Thesis Title: "The Internet of Living Things: Enabling Increased Information Flow in Dog—Human Interactions"
Principal Advisor: Dr. Melody Jackson
- Kaushik Subramanian, School of Interactive Computing, College of Computing, Georgia Tech, August 2017.
Thesis Title: "Human-guided Exploration for Efficient Reinforcement Learning"
Principal Advisor: Dr. Charles Isbell and Dr. Andrea Thomaz
- Gabriel Reyes, School of Interactive Computing, College of Computing, Georgia Tech, August 2017.
Thesis Title: "Enabling Kinesthetic Mobile Input Using Wearable Devices"
Principal Advisor: Dr. Gregory Abowd
- Maia Jacobs, School of Interactive Computing, College of Computing, Georgia Tech, December 2017.
Thesis Title: "Personalized technology in healthcare journeys" **Nominated by the College of Computing for ACM Best Dissertation Award**
Principal Advisor: Dr. Beth Mynatt
- Cheng Zhang, College of Computing, Georgia Tech, May 2018.
Thesis Title: "Design and Implementation of Novel Gestures for Wearables" **Nominated by the College of Computing for ACM Best Dissertation Award**
Principal Advisor: Dr. Gregory Abowd
- Clint Zeagler, College of Computing, Georgia Tech, December 2018.
Thesis Title: "Where to Wear It and How to Find It: designing textile-based wearable on-body electronic interfaces utilizing vibro-tactile proprioceptive display"
Principal Advisor: Dr. Melody Jackson

Payam Siyari, College of Computing, Georgia Tech, December 2018.
Thesis Title: "Optimization-based Hierarchical Structure Discovery, with Applications to Data Mining and Complex Systems"
Principal Advisor: Dr. Constantine Dovrolis

Giancarlo Valentin, Electrical and Computer Engineering, Georgia Tech, May 2019.
Thesis Title: "Wearable Interfaces for Symbolic Communication by Working Dogs"
Principal Advisor: Dr. Ayanna Howard and Dr. Melody Jackson

Larry Friel, College of Computing, Georgia Tech, ongoing.
Thesis Title:
Principal Advisor: Dr. Melody Jackson

Ph.D. Qualifying Exam Committees

Rawesak Tanawongsuwan, College of Computing, Georgia Tech, Fall 2002.
Principal Advisor: Dr. Aaron Bobick.

Amin Atrash, College of Computing, Georgia Tech, Fall 2003.
Principal Advisor: Dr. Sven Koenig.

Yifan Shi, College of Computing, Georgia Tech, Summer 2003.
Principal Advisor: Dr. Aaron Bobick.

Adam Feldman, College of Computing, Georgia Tech, Fall 2004.
Principal Advisor: Dr. Tucker Balch.

Alan Wagner, College of Computing, Georgia Tech, Fall 2004.
Principal Advisor: Dr. Ron Arkin.

Xuehai Bian, College of Computing, Georgia Tech, Spring 2005.
Principal Advisor: Dr. Gregory Abowd.

Tazama St. Julien, College of Computing, Georgia Tech, Spring 2005.
Principal Advisor: Dr. Chris Shaw.

Jill Coffin, Literature, Culture, & Communications, Georgia Tech, Spring 2007.
Principal Advisor: Dr. Jay Bolter.

Nishant Mehta, College of Computing, Georgia Tech, Spring 2008.
Principal Advisor: Dr. Alex Gray.

Kihwan Kim, College of Computing, Georgia Tech, Fall 2008.
Principal Advisor: Dr. Irfan Essa.

Gallagher Pryor, College of Computing, Georgia Tech, Fall 2008.
Principal Advisor: Dr. James Rehg.

Chris Simpkins, College of Computing, Georgia Tech, Fall 2008.
Principal Advisor: Dr. Ashok Goel.

Caleb Southern, College of Computing, Georgia Tech, Spring 2012.
Principal Advisor: Dr. Gregory Abowd.

Edison Thomasz, College of Computing, Georgia Tech, Spring 2012.
Principal Advisor: Dr. Gregory Abowd and Dr. Irfan Essa.

Vinay Bettadapura, College of Computing, Georgia Tech, Spring 2013.
Principal Advisor: Dr. Irfan Essa.

Ashley Edwards, College of Computing, Georgia Tech, Spring 2013.
Principal Advisor: Dr. Charles Isbell and Dr. Andrea Thomaz.

Seyed Mostfavi Rouzati, College of Computing, Georgia Tech, Fall 2013.
Principal Advisor: Dr. Blair MacIntyre.

Maia Jacobs, College of Computing, Georgia Tech, Spring 2014.
Principal Advisor: Dr. Beth Mynatt.

Aman Parnami, College of Computing, Georgia Tech, Spring 2014.
Principal Advisor: Dr. Gregory Abowd.

Cheng Zhang, College of Computing, Georgia Tech, Spring 2014.
Principal Advisor: Dr. Gregory Abowd.

Jonathan Bidwell, College of Computing, Georgia Tech, Spring 2014.
Principal Advisor: Dr. Gregory Abowd.

Lawrence Friel, College of Computing, Georgia Tech, Spring 2015.
Principal Advisor: Dr. Melody Jackson.

Charles Zeagler, College of Computing, Georgia Tech, Spring 2015.
Principal Advisor: Dr. Melody Jackson.

Joelle Alcaidinho, College of Computing, Georgia Tech, Spring 2016.
Principal Advisor: Dr. Melody Jackson.

Himanshu Sahni, College of Computing, Georgia Tech, Spring 2016.
Principal Advisor: Dr. Charles Isbell.

Ian Buckley, Robotics, Georgia Tech, Spring 2017.
Principal Advisor: Robotics faculty.

Jingdao Chen, Robotics, Georgia Tech, Spring 2017.
Principal Advisor: Robotics faculty.

David Fan, Robotics, Georgia Tech, Spring 2017.
Principal Advisor: Robotics faculty.

Paul Glotfelter, Robotics, Georgia Tech, Spring 2017.
Principal Advisor: Robotics faculty.

Kamil Saigol, Robotics, Georgia Tech, Spring 2017.
Principal Advisor: Robotics faculty.

Yang Tian, Robotics, Georgia Tech, Spring 2017.
Principal Advisor: Robotics faculty.

Ceara Byrne, College of Computing, Georgia Tech, Spring 2017.
Principal Advisor: Dr. Melody Jackson.

Dingtian Zhang, College of Computing, Georgia Tech, Spring 2017.
Principal Advisor: Dr. Gregory Abowd.

Amirreza Shaban, College of Computing, Georgia Tech, Spring 2017.
Principal Advisor: Dr. Byron Boots.

Kehinde Aina, College of Computing, Georgia Tech, Spring 2018.
Principal Advisor: Dr. Daniel Goldman.

Jonathan Balloch, College of Computing, Georgia Tech, Spring 2018.
Principal Advisor: Dr. Sonia Cheranova.

Hyeokhyen Kwon, College of Computing, Georgia Tech, Fall 2018.
Principal Advisor: Dr. Thomas Ploetz and Dr. Gregory Abowd.

Nivedita Arora, College of Computing, Georgia Tech, Fall 2018.
Principal Advisor: Dr. Gregory Abowd.

Zhiyu Lin, College of Computing, Georgia Tech, Fall 2018.
Principal Advisor: Dr. Mark Riedl.

Hong Li, College of Computing, Georgia Tech, Spring 2019.
Principal Advisor: Dr. Thomas Ploetz.

Ph.D. Special Problems students (in addition to PhD students supervised)

William Halliburton (CoC)

Fall 1999.

Wearable spectrometer development for skin lesion diagnosis.

Rawesak Tanawongsuwan (CoC)

Fall 1999.

Wearable Face Recognition.

Wasinee Rungsarityotin (CoC)

Fall 1999-Spring 2000.

Publications: D.2.15.

Finding location using omnidirectional video on a wearable computing platform.

Bradley Singletary (CoC)

Spring 1999 – Summer 2002.

Publications: B.9, D.2.13, D.2.14, D.9.2, D.3.13, D.3.14

Recognizing social situations using wearable sensing.

Member of Research Staff Applied Systems Intelligence, Inc.

Jake Auxier (CoC)

Spring 2000 - Fall 2000

Publications: D.2.16.

Wearable gesture recognition in the Aware Home.

Ben Wong (CoC)

Spring 2000 – Spring 2003.

Publications: D.3.15, D.2.26, D.2.30 .

Conversational speech-based agents.

Amin Atrash (CoC)

Spring 2003.

Publications: D.2.24, D.2.27 .

Activity recognition using wearable sensors.

Member of Research Staff, BBN.

Arya Irani (CoC)

Fall 2003–Spring 2004

Mobile gesture interfaces.

Daniel Plaisted (CoC)

Fall 2003–Spring 2004

Publications: *D.2.25, D.2.28, .*

Mobile text entry.

Xuehai Bian (CoC)

Fall 2004

Publications: *D.2.34 .*

Hybrid on-body/environmental sensing for activity recognition.

Evan Barba (CoC)

Summer 2005

Rapid prototyping.

Nishant Mehta (CoC)

Fall 2007–Spring 2008

Sign language recognition from fMRI signals.

Ceara Byrne (CoC)

Fall 2013

Interfaces for dogs.

Shelly Bagchi (CoC)

Spring 2016

China pattern matching.

Nirmal Patel (CoC)

Fall 2007–Fall 2010.

Research on mobile interfaces. Google X.

Saul Reynolds-Haertle (CoC)

Spring 2015.

Passive Haptic Learning of Morse Code.

Raj Kosaraju (CoC)

Spring 2016.

Food intake monitoring. Gesture interfaces.

M.S. Thesis Students supervised

Daniel Kohlsdorf (U Bremen)

Spring 2009–Fall2011

*See above. Undergrad/Masters in Germany. Gesture recognition and Passive Haptic Learning. **Best diploma thesis prize in computer science 2011.** Georgia Tech PhD student.*

Jason Alderman (CoC)

Fall 2006–Spring 2006

“Generating Comics Narrative to Summarize Wearable Computer Data”

Christian Metzger (ETH-Zurich)

Spring 2004–Fall 2004

Publications: *D.2.29*

Mobile interfaces to assist face-to-face conversation. Accepted to PhD program ETH-Zurich.

M.S. Special Problems students

Bastian Leibe (CoC)

Spring 1999-Fall 1999

Publications: *B.9, D.2.13, D.2.14, D.4.1 D.9.2 D.2.17, B.10.*

Best Paper Award IEEE VR2000. Received the ETH-Zurich Medal for his PhD dissertation on computer vision.

Kent Lyons (CoC)

Fall 1999-Spring 2001.

Publications: *See above.*

Completed MS Spring 2001. Graduated with Georgia Tech PhD 2005.

Rob Melby (CoC)

Fall 2000-Summer 2002.

Completed MS Summer 2002. Researcher at Atlanta Veteran's R&D Center. Research on mobile computer vision.

Tracy Westeyn (CoC)

Spring 2001-Spring 2002.

Publications: *See above.*

Transferred to CoC PhD program.

Daniel Ashbrook (CoC)

Fall 2002-Summer 2005.

Publications: *See above.*

Completed MS Spring 2005. Activity discovery and prediction.

Cornelius (Niels) Snoeck (TU Delft)

Spring 2003-Fall 2003

Publications: *D.2.26, D.2.30 .*

Completed MS Fall 2003. Running start-up business. Mobile interfaces to assist face-to-face conversation.

Robert (Marty) McGuire (CoC)

Fall 2003

Publications: *D.2.26, D.3.19, .*

Research Scientist at CMU. Evaluation of mobile calendaring systems.

Arya Irani (CoC)

Spring 2004

Mobile interfaces.

Daniel Plaisted (CoC)

Spring 2004-Summer 2004

Mobile text entry.

Chris Skeels (CoC)

Spring 2004-Spring 2005

Publications: *D.2.30, D.2.33 .*

Completed MS Spring 2005. Mobile interfaces to assist face-to-face conversation. Accepted to Georgia Tech PhD program.

SeungYon Lee (CoC)

Summer 2004-Fall 2010

Publications: *See above.*

Completed MS Spring 2005. Educational game development for ASL.

Stephen Griffin (LCC)

Summer 2004-Fall 2004.

Mobile keyboard design. Designer at Cartoon Network

Kristin Vadas Marsicano (CoC)

Fall 2004-Spring 2006

Publications: D.2.34 .

Mobile display evaluation. Awarded Donald V. Jackson Fellowship.

James Clawson (CoC)

Spring 2005-Summer 2005

Publications: D.2.31, D.2.35 .

Completed MS Summer 2005. Mobile text entry evaluation.

Peter Pesti (CoC)

Spring 2005-Summer 2005

Publications: D.3.26 .

Completed MS Summer 2005. Eyeblink interfaces.

Myun Cheol Doo (CoC)

Fall 2005-Spring 2006.

Mobile interfaces.

Nirmal Patel (CoC)

Fall 2005-present

Publications: D.3.18 .

Dual Purpose Speech interfaces.

Courtney Lessl (CoC)

Summer 2005

Educational game design for young Deaf children.

Peter Presti (CoC)

Summer 2005

Educational game design for young Deaf children.

Clayton Hutto (CoC)

Spring 2006

Educational game design for young Deaf children.

Mi Youn Jun (CoC)

Spring 2007 - Spring 2008

Educational game design for young Deaf children.

Cheol-Woo Jung (CoC)

Spring 2007 - Fall 2007

Educational game design for young Deaf children.

Jeremiah Rogers (CoC)

Spring 2007

Mobile interfaces.

Alexander Rudnick (CoC)

Spring 2007

Mobile text entry.

Mrunal Kapade (CoC)

Spring 2007

3D reconstruction of cities using GPS obstruction.

Kihwan Kim (CoC)

Summer 2007

3D reconstruction of cities using GPS obstruction.

Stephen Cuzzort (CoC)

Fall 2007-Spring 2008

Rehabilitation games for spinal cord injury.

Jiasheng He (CoC)

Fall 2007-Fall 2008

Mobile interfaces.

Jung Soo Kim (CoC)

Fall 2007 - Spring 2009

Gesture recognition toolkit.

Kevin Huang (CoC)

Fall 2007 - Spring 2009

Passive Haptic Learning.

Jesse Smith (CoC)

Spring 2008

Embedding sensors in toys.

Scott Gilliland (CoC)

Fall 2008-Spring 2010

Rapid prototyping mobile interfaces.

Ketaki Deo (CoC)

Spring 2009-Spring 2010

Scripts for testing emergency 911 service.

James Deen (ID)

Fall 2009

Mobile tactile interfaces.

Halley Profita (ID)

Fall 2010

*Electronic textiles (with Clint Zeagler). **First Prize for both Best in Show and Most Inclusive and Usable Design, ISWC 2012.***

Alex Samarchi (CoC)

Fall 2010-Spring 2012

Using mobile video for practicing dance.

David Quigley (CoC)

Fall 2012-Spring 2013

Passive Haptic Learning.

Andy Pruett (CoC)

Fall 2012-Spring 2013

Wearable sensors to predict blood glucose levels in Type 1 diabetes.

Subrai Pai (CoC)
Fall 2012-Fall 2013
Wearable sensors to predict blood glucose levels in Type 1 diabetes.

Anjali Ashok (CoC)
Spring 2013
Passive haptic learning of stenotype.

Aditya Tirodkar (CoC)
Spring 2013-Fall 2013
Wearable sensors to predict blood glucose levels in Type 1 diabetes.

Himanshu Sahni (CoC)
Spring 2013-Spring 2014
Depth cameras for sign language verification.

Abdelkareem Bedri (visitor, U. Khartoum)
Spring 2013-Fall 2013
Depth cameras for sign language verification.

Celeste Mason (CoC)
Summer 2013-Spring 2015
Interspecies interaction. Sign language learning games.

Anhong Guo (CoC)
Fall 2013-Spring 2014
Order picking and Passive Haptic Learning.

Shashank Ragdu (CoC volunteer)
Spring 2013-Fall 2013
Order picking and Passive Haptic Learning.

Anjali Ashok (CoC volunteer)
Spring 2013
Passive Haptic Learning.

James Hallam (ID)
Spring 2014
Passive Haptic Learning.

Xiaolong (Shawn) Wu (CoC)
Fall 2014-Spring 2016
Order picking.

Zhengyang Shen (CoC)
Fall 2014-Fall 2015
Order picking.

Abdelkareem Bedri (CoC)
Fall 2014-Spring 2016
Mobile interfaces. Qualcomm Innovation Fellowship \$100,000 winner 2017.

Sarthak Ghodsh (CoC)
Fall 2015
Proprioceptive interfaces.

Dingtian (Alan) Zhang (CoC)

Spring 2015

Proprioceptive interfaces.

Siddharth Raja (CoC)

Fall 2015-Spring 2016

Sign language recognition with Kinect2.

Yuanzhe Fan (CoC)

Spring 2016

FaceCard.

Xiaowuan (Cheryl) Wang (CoC)

Fall 2016-Spring 2017

Sign language recognition with Kinect2. ASL mobile phone games.

Kshitish Deo (CoC)

Fall 2016-Spring 2018

Sign language recognition with Kinect2.

Murtaza Dhuliawala (CoC)

Fall 2016-Spring 2017

Synchronized eye interfaces using EOG.

Aawantika Sahu (CoC)

Fall 2016-Spring 2017

Dolphin vocalization analysis.

Charles Ramey (CoC)

Spring 2017-Summer 2017; Spring 2018-present

Two-way dolphin communication.

Chirag Taylor (CoC)

Spring 2017-Fall 2017

PARQR: Piazza Automated Related Question Recommender.

Brent Zucker (CoC)

Spring 2017

Synchronized gesture interfaces.

Jian Ruan (CoC)

Spring 2017

Dog toys that detect temperament.

Mahesh Natarajan (CoC)

Spring 2017

Passive haptic learning.

Richa Arora (CoC)

Spring 2017

Eye blink analysis.

Ravikiran Ramaswamy (CoC)

Spring 2017-Spring 2018

CopyCat sign language game to develop memory for young deaf children.

Yichi Liu (CoC)
Spring 2017-Fall 2017
Graphic design for CopyCat sign language game to develop memory for young deaf children.

”Rocko” Paul Graziano (OMSCS)
Fall 2017-present
Anti-plagiarism.

Girish Mohandass (OMSCS)
Fall 2017
Anti-plagiarism.

Tim Miller (OMSCS)
Fall 2017
Anti-plagiarism.

Michel Mati (OMSCS)
Fall 2017
Anti-plagiarism.

Joshua Smith (OMSCS)
Fall 2017
Anti-plagiarism.

Christoper Smith (OMSCS)
Fall 2017
Anti-plagiarism.

Pranathi Tupakula (CoC)
Fall 2017
CopyCat sign language game for children.

Richard Li (CoC)
Fall 2017-present
Dual-purpose speech. ScratchVR. Georgia Tech College of Computing Outstanding Masters Research 2017. Best Computing Poster Award Georgia Tech Career, Research, and Innovation Development Conference. Runner up Masters thesis competition.

Anandghan Waghmare (CoC)
Fall 2017-Spring 2018
Emulating large FOV screens.

Jainesh Doshi (CoC)
Fall 2017
CHAT: two-way communication experiments with wild dolphins.

Girish Murali (CoC)
Fall 2017-Fall 2018
PARQR: Automatic post suggestion on Piazza.

Sumeet Jain (CoC)
Fall 2017-Spring 2018
Non line-of-sight augmented reality.

Juyoung Lee (KAIST)
Fall 2017-present
Synchronized gesture interfaces.

Shirley Qiuyue Xue (CoC)
Spring 2018-present
Jack Rearch Watson homework-for-hire anti-plagiarism agent. BrainBraille

Sarthak Wahal (CoC)
Spring 2018-Fall 2018
Jack Rearch Watson homework-for-hire anti-plagiarism agent.

Tanmay Binaykiya (CoC)
Spring 2018
Jack Rearch Watson homework-for-hire anti-plagiarism agent.

Noah Bilgrien (CoC)
Spring 2018-present
PARQR: Automatic post suggestion on Piazza.

Somesh Ganesh (CoC)
Spring 2018
CHAT: two-way communication experiments with dolphins.

Athira Nair (CoC)
Spring 2018
Copycat.

Nicholas Larson (OMSCS)
Spring 2018
Jack Reacher Watson anti-plagiarism homework-for-hire agent.

Jesus Magana (OMSCS)
Spring 2018
Jack Reacher Watson anti-plagiarism homework-for-hire agent.

Michael O'Connor (OMSCS)
Spring 2018
Jack Reacher Watson anti-plagiarism homework-for-hire agent.

Mark Wilson (OMSCS)
Spring 2018
Jack Reacher Watson anti-plagiarism homework-for-hire agent.

Paul Jacob Logas (CoC)
Spring 2018
FIDO dog vocalizations.

Theodoros Panagiotopoulos (CoC)
Spring 2018-Spring 2019
Order picking. Sign language recognition.

Ting Gu (CoC)
Spring 2018-Spring 2019
Machine learning for breast cancer navigation.

Ankit Arora (CoC)
Fall 2018
BrainBraille.

Arber Muharemi (CoC)

Fall 2018 - present

Social effects of HWD use.

Sachin (OMSCS)

Fall 2018

Jack Reacher Watson anti-plagiarism homework-for-hire agent.

David Benton (OMSCS)

Fall 2018

Jack Reacher Watson anti-plagiarism homework-for-hire agent.

Christopher Hedenberg (OMSCS)

Fall 2018

Jack Reacher Watson anti-plagiarism homework-for-hire agent.

Harsh Kohli (OMSCS)

Fall 2018

Jack Reacher Watson anti-plagiarism homework-for-hire agent.

Pepper Miller (OMSCS)

Fall 2018

Jack Reacher Watson anti-plagiarism homework-for-hire agent.

Diego Vacanti (OMSCS)

Fall 2018

Jack Reacher Watson anti-plagiarism homework-for-hire agent.

Abhishek Mangal (CoC)

Fall 2018

PARQR: Automatic post suggestion on Piazza.

Cooper Colglazier (CoC)

Spring 2018-Spring 2019

Passive Haptic Rehabilitation of Swallowing.

Undergraduate Research Students

Susandeize Puga (MIT CS)

1991-1992

ThingWorld 3D object modeling camera tools.

Peter Gast (MIT CS)

1991-1992

Thingworld OpenGL 3D graphics subsystem.

Kenneth Russell (MIT CS)

1994-1997

Publications: B.4, D.3.4, D.3.5, D.3.6, 88, D.2.25 .

ALIVE augmented reality smart room. Completed MIT Masters. Positions at Sun and Google.

Kevin Pipe (MIT CS)

1995-1997

Wearable spectrometer for skin lesion diagnosis. MIT EECS PhD.

Solomon Assefa (MIT CS)

1996-1997

Publications: D.8.6 .

Indoor positioning systems.

Cyrus Eyster (MIT CS)

1996-1997

Publications: D.2.8 .

Augmented reality billiards.

Len Giambroni (MIT CS)

1996-1997

Position based augmented reality gaming.

Madhilka Jain (MIT CS)

1996-1997

Machine learning theory research.

Dana Kirsch (MIT CS)

1996-1997

Publications: D.8.6, B.5 .

Indoor positioning systems. Completed MIT Media Lab Masters. Positions at Disney and Shotspotter.

Jeffrey Levine (MIT CS)

1996-1998

Publications: B.5 .

Wearable computers and augmented reality. Completed MIT Media Lab Masters.

Benjamin Walter (MIT CS)

1996-1997

Wearable computing interfaces.

Joshua Weaver (MIT CS)

1996-1999

Publications: B.7, B.6, C.2.4, D.2.8, D.2.9, D.2.12 .

Computer vision based sign language recognition. Completed MIT Media Lab Masters. Google Streetview. Google Project Glass.

Bayard Wentzel (MIT CS)

1996-1997

Wireless communication for wearable computers.

Kent Lyons (CoC)

Spring 1999-Fall 1999.

Publications: *See above.*

RF positioning system for the Aware Home. Completed Georgia Tech PhD. Research scientist positions at Intel and Nokia.

Rob Melby (CoC)

Spring 1999-Fall 2000.

Publications: *See above.*

Computer vision and wearable computing. CoC Masters graduate.

Justin Weeks (CoC)

Spring 2000.

Publications: *B.9, B.10, D.2.17* .
Perceptive workbench.

Adam Wosotowsky (CoC)
Summer 2000-Fall 2000.
Classroom capture of lecturer's perspective

Daniel Ashbrook (CoC)
Spring 2000-Fall 2002.
Publications: *See above.*
Gesture-based control of in-home devices. Awarded second place Judge's Award and second place People's Choice Award in College of Computing's Undergraduate Research Symposium 2000; Ford Motor Company Research Laboratory's Best Design Solution 2001. Completed Georgia Tech PhD.

David Minnen (CoC)
Fall 2000-Spring 2001.
Publications: *See above.*
Gesture-based augmented reality. Third place Judge's Award in College of Computing's Undergraduate Research Symposium 2001. Completed Georgia Tech PhD.

Will Rachelson (CoC)
Fall 2000-Spring 2001.
USB development kit for interaction.
Developing prototype hardware for UC Berkeley for Antarctica exploration.

Aaron Baughman (CoC)
Fall 2001-Spring 2001.
Vibratory stimulation to improve deep brain implant surgery. Graduate school.

Amy Hurst (CoC)
Spring 2001-Spring 2003
Publications: *B.10* .
Medical monitoring through gesture. Third place Judge's Award in College of Computing's Undergraduate Research Symposium 2002. CMU PhD; Professor UMBC.

John Etherton (CoC)
Fall 2001-Spring 2001
Distributed, Variable Bandwidth Sensing for Intelligent Agents.

Aaron Drew (CoC)
Spring 2001-Spring 2003
Augmented reality pool.

James Fusia III (CoC)
Spring 2001-Fall 2005
Publications: *D.2.25* .
Apparatus for mobile gesture tracking and wearable computing.

Robert McGuire (CoC)
Spring 2001-Spring 2003
Publications: *See above.*
Wearable computer user interfaces.
Research scientist at CMU.

- Graham Coleman** (CoC)
Spring 2002.
Introduction to Intelligent Systems Course Development. Graduate school.
- Jason Cummings** (CoC)
Spring 2002.
Mobile speech interface user study.
- Nirmal Patel** (CoC)
Fall 2002-Summer 2005
Publications: See above.
Mobile input. Georgia Tech Phd student.
- Owen Barnett** (CoC)
Spring 2002
Media monitoring.
- Jack Gruendler** (CoC)
Spring 2003
Mobile gaming.
- Steven Hamilton** (CoC)
Spring 2003-Fall 2006
Enabling technology for the Deaf.
- Alaric Craig** (CoC)
Fall 2003
Media monitoring.
- Roland Alberciak** (CoC)
Fall 2003
Mobile interfaces.
- William Helfrich** (CoC)
Fall 2003-Fall 2004
Pattern recognition.
- You Kyung Cha** (CoC)
Fall 2003-Spring 2004
Face tracking for eyeblink interfaces.
- Jiasheng He** (CoC)
Spring 2004-Fall 2006
Wireless sensor development. First Place People's Choice Award in College of Computing's Undergraduate Research Symposium for "The Gesture Watch - An Alternative Mobile Device Input System."
- Patrick Bailey** (CoC)
Fall 2004
Mobile gaming.
- Tom Culpepper** (CoC)
Fall 2004 - Spring 2005
Robotic sign language interfaces. Research reported in US News and World Report Colleges Issue.

Richard Bailey (CoC)

Spring 2004

Mobile gaming.

Matt Anderson (CoC)

Spring 2004-Spring 2005

Mobile Interfaces.

Mason Grant (CoC)

Summer 2006

Wireless sensor development.

Bobby Matthew (CoC)

Fall 2006-Spring 2006

Enabling technology for the Deaf.

Cyrus Radfar (CoC)

Fall 2004-Fall 2005

Enabling technology for the Deaf. First place People's Choice Award, College of Computing's Undergraduate Research Symposium for "Lone Sorcerer: An American Sign Language Driven Quest."

Samuel Young (CoC)

Spring 2006

Enabling technology for the Deaf.

Gregory Wilson (CoC)

Summer 2006-Spring 2007

Enabling technology for the Deaf.

Brian Williams (CoC)

Fall 2006

Enabling technology for the Deaf.

Jung Soo Kim (CoC)

Fall 2006-Spring 2006

Gesture recognition toolkit. Completed Georgia Tech Masters.

Myeung Choel (CoC)

Fall 2006-Spring 2006

Mobile Korean text entry.

Scott Gilliland (CoC)

Spring 2007-Spring 2008

Mobile Interfaces. Third place People's Choice Award, College of Computing's Undergraduate Research Symposium 2008 for "Curveball: Using Grip and Motion to Interact with Modal UIs." Completed Georgia Tech Masters. Georgia Tech Research Scientist.

Robbie Iannucci (CalPoly)

Summer 2007, Summer 2008

Text Entry.

Eric Hollembeak (CoC)

Summer 2007

Pattern recognition on iPhone.

Izzet Envarli (CoC)
Summer 2007
Enabling technology for the Deaf.

Mary Gezo (CoC)
Summer 2007
Mobile joystick prototyping

Patrick Crenshaw (CoC)
Spring 2008
Pattern recognition with HTM.

Stephen Hilber (CoC)
Spring 2008
Sign language recognition.

Lauren Burkhart (CoC)
Fall 2006 - Summer 2007
Enabling technology for the Deaf.

Samuel Hartsfield (CoC)
Spring 2008
GART gesture recognition toolkit.

Ryan Selly (CoC)
Spring 2008
Effcidrive: gamifying fuel efficient driving.

Steve Atkins (CoC)
Spring 2008
Bluetooth Twiddler keyboard.

Dan Gifford (CoC)
Spring 2008-Spring 2009
Text entry. Institute research award in Computing for “The Effects of Mobility on Mini-Qwerty Text Input” poster. Also won third place Judge’s Award and second place People’s Award in College of Computing’s Undergraduate Research Symposium 2009.

Phong Si (CoC)
Spring 2009-Spring 2010
Text entry. Institute research award in Computing for twelve key text entry poster 2010.

Abhishek Jain (CoC)
Fall 2009-Spring 2011
Bachelor’s thesis “Mobile Tactile Stimulation for Passive Haptic Learning of Simple Melodies.” Third place Judge’s Award in College of Computing’s Undergraduate Research Symposium 2011.

David Quigley (CoC)
Fall 2009-Summer 2011
MAGIC gesture toolkit user studies and capture system for Android. Currently Georgia Tech Masters student.

Noah Witherspoon (CoC)
Fall 2009-Spring 2010
Mobile interfaces. Now at Apple.

Ankit Shankar (CoC)
Spring 2010
Sign language recognition.

Alex Samarchi (CoC)
Spring 2010
Mobile user studies. Georgia Tech Masters.

Emily Fujimoto (Harvey Mudd)
Summer 2010
Bluetooth devices.

Brad Henry (ME)
Spring 2010 - Summer 2010
Created walking track for text entry studies.

BoHao Li (CoC)
Fall 2010-Spring 2011
Bachelor's thesis "AirTouch: Mobile Gesture Interaction with Wearable Tactile Displays." College of Computing winner in the 2010 Undergraduate Research Opportunities Program Spring Research Symposium

Noah Posner (ID)
Fall 2010-Spring 2011
Rapid prototyping.

Halley Profita (ID)
Fall 2010
Gesture interfaces. Georgia Tech Masters. University of Colorado Boulder PhD student.

Stewart Butler (CoC)
Fall 2010-Summer 2012
Wearable computers for two-way communication experiments with dolphins. First place Judge's Award in College of Computing's Undergraduate Research Symposium 2012. Currently Georgia Tech Masters.

Douglas Abrams (CoC)
Fall 2011
Mobile text entry user studies.

Daniel O'Rourke (CoC)
Fall 2011
Mobile text entry user studies.

Stephanie Pate (CoC)
Fall 2011
Mobile text entry user studies.

Jackson Walsh (CoC)
Fall 2011
Mobile text entry user studies.

Margaret Markey (CoC)
Fall 2011-Spring 2012
Mobile text entry user studies.

Alyssa Kuncaitis (CoC)
Fall 2011-Spring 2012
Mobile text entry user studies.

Bret Brammer (CoC)
Fall 2011-Spring 2012
Mobile text entry user studies.

Blaise Hymel (CoC)
Fall 2011-Spring 2012
Mobile text entry user studies.

Raymond Jabaley (CoC)
Fall 2011-Spring 2012
Mobile text entry user studies.

Andres Arbelaez (CoC)
Fall 2011-Spring 2012
Mobile text entry user studies.

David Howard (ID)
Spring 2013-Summer 2015
Prototyping.

Pavleen Thukral (CoC)
Spring 2013-Spring 2016
Depth cameras for sign language verification. First place award in the Computer Science division of Undergraduate Research Symposium 2013. First place award, Computer Science division at Georgia Tech Undergraduate Research Symposium 2014 for TMI/OEI. President's Undergraduate Research Award. CEO and founder Stackfolio.

Lily Burkeen (ME)
Spring 2013-Spring 2014
Prototyping.

Jay Zuerndorfer (CoC)
Fall 2013-Spring 2015
Captioning on Glass. Prototyping. Interfaces for dogs.

Alex Johnson (CoC)
Fall 2013-Spring 2014
Prototyping.

Zehua "Winter" Guo (ECE)
Fall 2013-Spring 2015
Prototyping interfaces for dogs.

Kelcy Newton (CoC)
Fall 2013
Passive Haptic Learning and web design.

Oliver Goldbart (CoC)
Fall 2013-Spring 2014
Linking SMARTSign sign language dictionary and e-readers

Ishaan Grover (CoC)
Fall 2013-Spring 2016
Linking SMARTSign sign language dictionary and e-readers

Minsik Bang (CoC)
Fall 2013-Fall 2014
Developing SMARTSign sign language dictionary media

Alisa Heppe (CoC)
Fall 2013-Fall 2014
Developing SMARTSign sign language dictionary media

Rebecca Tendean (CoC)
Fall 2013-Fall 2014
Developing SMARTSign sign language dictionary media

Tseng-Jung “Joan” Chen (CoC)
Fall 2013-Spring 2017
Analysis of dolphin vocalizations.

Tri-An Le (CoC)
Spring 2014
Passive haptic rehabilitation.

Greg Bishop (CoC)
Spring 2014
Passive haptic rehabilitation.

Neeraja Vinjam (CoC)
Spring 2014
Passive haptic rehabilitation.

Mathew Eziashi (CoC)
Spring 2014
Passive haptic rehabilitation.

Rikin Marfatia (CoC)
Spring 2014
Passive haptic rehabilitation.

Stefan Koshy (CoC)
Spring 2014
Passive haptic rehabilitation.

Siddharth Dhingra (CoC)
Spring 2014
Passive haptic rehabilitation.

Miru Park (CoC)
Spring 2014
Passive haptic rehabilitation.

Aawantika Sahu (CoC)
Spring 2014-Spring 2016
Order picking. Dolphin vocalization analysis.

Andrea Fletcher (CoC)
Fall 2014-Spring 2015
Sign language games.

K. Goel (CoC)
Fall 2014
Passive Haptic Learning.

Kevin Shin (CoC)
Spring 2015
Passive haptic rehabilitation.

Kathy Cheng (CoC)
Spring 2015
Passive haptic rehabilitation.

Rochelle Lobo (CoC)
Spring 2015
Passive haptic rehabilitation.

Alyshaz Ali (CoC)
Spring 2015
Passive haptic rehabilitation.

Jessica Rosenfield (CoC)
Spring 2015-Spring 2016
Sign language games. Outstanding Senior in Computing 2017.

Juliet Benjamin (CoC)
Spring 2015-Fall 2016
Rapid prototyping.

Kunaal Naik (CoC)
Spring 2015-Spring 2016
MAGICSpell sign language software.

Charles Ramey (CoC)
Summer 2015-Summer 2016
Two-way dolphin communication.

Nick Doering (CoC)
Summer 2015-Fall 2015
Passive haptic rehabilitation. Now at Simon Fraiser University.

Rohan Avalani (CoC)
Fall 2015
Passive haptic rehabilitation.

Angela Vujic (CoC)
Fall 2015-Spring 2017
With Melody Jackson (primary). Affective Brain Computer Interfaces. Outstanding Undergraduate Research Award in Computing 2017.

“Elli” Madeleine Goebel (CoC)
Spring 2016-present
Popsign sign language games. Second place award in the Computer Science division of Undergraduate Research Symposium 2018.

Dilara Soylu (CoC)

Spring 2016

Gesture toolkits.

Nick Bitzis (CoC)

Spring 2016

Passive Haptic Learning.

Jinming Yu (CoC)

Spring 2016

Eating monitoring.

F. Wong Sala (CoC)

Spring 2016

Passive Haptic Learning.

Aditya Vishwanath (CoC)

Spring 2016-Spring 2018

CopyCat. EDS Outstanding Rising Senior Award in Computing 2017. Outstanding Senior Award 2018.

Nick Petosa (CoC)

Spring 2016-Fall 2017

SMARTSignAR with Harley Hamilton.

Yang Zhang (CoC)

Spring 2016-Fall 2016

Passive haptic rehabilitation. Now at Simon Fraiser University.

Mauricio Builes (CoC)

Spring 2016

Passive haptic rehabilitation.

Gedeon Nyengele (CoC)

Spring 2016

Passive haptic rehabilitation.

Pavel Komarov (CoC)

Spring 2016

Passive haptic rehabilitation.

Christiaan Vanderlinde (CoC)

Spring 2016

Passive haptic rehabilitation.

Sarthak Srinivas (CoC)

Spring 2016-present

*Passive Haptic Learning. Order picking. HWD user studies. Start-up Oculogx. **Second place Microsoft Imagine Cup World Finals 2017. Third place Microsoft Imagine Cup US nationals 2017. Finalist Inventure Prize 2017. \$100,000 winner of Atlanta Startup Battle 2017. Finalist National Collegiate Inventors Competition.***

Allison Sommers (CoC)

Fall 2016-Spring 2017

Passive Haptic Learning.

Ashwin Vadivel (CoC)

Fall 2016

Passive Haptic Learning.

Surina Puri (CoC)

Fall 2016

Positioning of head worn displays.

Rohan Ramakrishnan (CoC)

Fall 2016-Spring 2017

Positioning of head worn displays.

Shotaro Watanabe (CoC)

Fall 2016

Positioning of head worn displays.

Jedidiah Akano (CoC)

Fall 2016

Palmprint authentication and eye and head interfaces.

Leah Cohen (CoC)

Fall 2016-Spring 2017

Passive Haptic Learning and Rehabilitation.

Ryan Mar (CoC)

Fall 2016

Passive Haptic Learning and Rehabilitation.

Rohan Avalani (CoC)

Spring 2016-Fall 2016

Passive Haptic Learning and Rehabilitation.

Sarthak Ghosh (CoC)

Spring 2016-Spring 2018

“Approprio” proprioceptive interfaces.

R. Kulkarni (CoC)

Fall 2016

Passive Haptic Learning.

Xueting Zhang (CoC)

Fall 2016

“Approprio” proprioceptive interfaces.

Nick Zhao (CoC)

Fall 2016, Spring 2017, Spring 2018

Passive Haptic Rehabilitation.

Yiding Zhao (CoC)

Fall 2016-Spring 2017

Passive haptic rehabilitation.

Timothy Aveni (CoC)

Fall 2016-Spring 2019

Passive haptic learning of stenotype.

Raphael Gontijo Lopes (CoC)
Fall 2016-Spring 2018
Pattern discovery. Currently AI Resident at Google Brain.

Yu Hsin Lo (Magenta) (CoC)
Spring 2017
Passive haptic learning of Morse.

Jeff Baucom (CoC)
Spring 2017
Passive haptic rehabilitation.

Jingyuan Hu (CoC)
Spring 2017
Passive haptic rehabilitation.

Vikas Luthra (CoC)
Spring 2017
Passive haptic rehabilitation.

Niraj Suresh (CoC)
Spring 2017
Passive haptic rehabilitation.

Sarah Autry (CoC)
Summer 2017
Passive Haptic Learning and Rehabilitation.

Jose Correia Teixeira (CoC)
Summer 2017
Passive Haptic Learning and Rehabilitation.

Diane Nguyen (CoC)
Summer 2017
Passive Haptic Learning and Rehabilitation.

Brandon Culver (CoC)
Summer 2017-Fall 2017
Passive Haptic Learning and Rehabilitation.

Ashley Evans (CoC)
Summer 2017-Spring 2018
Passive Haptic Learning and Rehabilitation.

Nicolette Prevost (CoC)
Summer 2017
Passive Haptic Learning and Rehabilitation.

Jennifer Vo (CoC)
Summer 2017-Fall 2017
Passive Haptic Learning and Rehabilitation.

Sehyeong An (CoC)
Summer 2017
Passive Haptic Learning and Rehabilitation.

Zaeem Adamjee (CoC)
Fall 2017-Spring 2018
Passive Haptic Learning and Rehabilitation.

Asana Adams (CoC)
Fall 2017-Spring 2018
Passive Haptic Learning and Rehabilitation.

Saqib Ali (CoC)
Fall 2017
MAGIC Gathering gesture recognition toolkit.

Dylan Amador (CoC)
Fall 2017-Spring 2018
Passive Haptic Learning and Rehabilitation.

Victor Chen (CoC)
Fall 2017-present
ScratchVR: Virtual Reality input.

Hannah Choi (CoC)
Fall 2017
Passive Haptic Learning and Rehabilitation.

Annette Cochran (CoC)
Fall 2017
Passive Haptic Learning and Rehabilitation.

Nathan Dass (CoC)
Fall 2017
Social effects of HWD use.

Arber Muharemi (CoC)
Fall 2017-Spring 2018
Social effects of HWD use.

Linda Thomas (CoC)
Fall 2017
Passive Haptic Learning and Rehabilitation.

Tim Trent (CoC)
Fall 2017
Smart toys for dogs.

Shane Austrie (CoC)
Fall 2017
Passive Haptic Learning and Rehabilitation.

Sanjana Kadiveti (CoC)
Fall 2017-Spring 2018
Passive Haptic Learning and Rehabilitation.

Austin Mitchell (CoC)
Fall 2017
Passive Haptic Learning.

Rodrigo Pontes (CoC)
Fall 2017-Spring 2018
Passive Haptic Learning and Rehabilitation.

Zachary Russell (CoC)
Fall 2017
Passive Haptic Learning and Rehabilitation.

Jonathan Wang (CoC)
Fall 2017
Passive Haptic Learning and Rehabilitation.

Martina Lo (CoC)
Fall 2017-Spring 2018
Passive Haptic Learning and Rehabilitation.

Charu Thomas (ISYE)
Fall 2017-Fall 2018
Order picking. Start-up Oculogx. Second place Microsoft Imagine Cup World Finals 2017. Third place Microsoft Imagine Cup US nationals 2017. Finalist Inventure Prize 2017. \$100,000 winner of Atlanta Startup Battle 2017. Finalist National Collegiate Inventors Competition.

Jason Wu (CoC)
Fall 2017-Spring 2018
Synchronized gesture interfaces. Outstanding Undergrad Research Award 2018.

Xiuxiu Yuan (CoC)
Fall 2017, Spring 2018
Passive Haptic Rehabilitation.

Megha Pandya (CoC)
Fall 2017
Passive Haptic Rehabilitation.

Gargi Pratyusha Karnati (CoC)
Spring 2018, Spring 2019
Head worn display teaching exhibits.

Marcus Mcguire (CoC)
Spring 2018
Dolphin identification through spot patterns.

Shaurye Aggarwal (CoC)
Spring 2018-present
Off-center AR. Oritrak. Synchronized gesture interfaces.

Taylor Stillman (CoC)
Spring 2018
Simulated wide FOV head worn display.

Jonathan Hernandez (CoC)
Spring 2018
Simulated wide FOV head worn display.

Abhishek Mangal (CoC)
Spring 2018
Simulated wide FOV head worn display.

Jinghua Zhang (CoC)
Spring 2018
Copycat sign language recognition.

Binit Shah (CoC)
Spring 2018
Copycat sign language recognition.

Matthew Lemons (CoC)
Spring 2018
Depth cameras for sign language recognition.

Paige Ashleigh Ryan (CoC)
Spring 2018
Popsign sign language games.

Jackson Bailey (CoC)
Fall 2018
Passive Haptic Rehabilitation.

Daniel Derochers (CoC)
Fall 2018
Passive Haptic Rehabilitation.

Dana Gould (CoC)
Fall 2018-Spring 2019
Passive Haptic Rehabilitation.

Pramod Kotipalli (CoC)
Fall 2018
Order picking. Comparing HWD to wristwatch during dual tasks.

Annie Lee (CoC)
Fall 2018
Passive Haptic Rehabilitation.

Soumil Nariani (CoC)
Fall 2018-Spring 2019
Passive Haptic Rehabilitation.

Mary Catherine Van Buren (CoC)
Fall 2018-Spring 2019
Passive Haptic Rehabilitation.

Akhil Gazula (CoC)
Fall 2018
Passive Haptic Rehabilitation.

Neha Pasricha (CoC)
Fall 2018-Spring 2019
Passive Haptic Rehabilitation.

Fatma Rashed (CoC)
Spring 2019
Passive Haptic Rehabilitation.

Karleigh Irwin (CoC)
Spring 2019
Passive Haptic Rehabilitation.

Will Berry (CoC)
Spring 2019
Passive Haptic Rehabilitation.

Karleigh Irwin (CoC)
Spring 2019
Passive Haptic Rehabilitation.

D. Teaching Honors and Awards

1. Georgia Tech. Nominated for Outstanding Use of Innovative Technologies in Teaching Award, 2012.
2. Georgia Tech. Class of 1934 Outstanding Innovative Use of Education Technology Award 2013.

II. RESEARCH AND CREATIVE SCHOLARSHIP

A. Thesis

S.M. Thesis

Title: “*Visual Recognition of American Sign Language Using Hidden Markov Models.*”
Date Completed: *February 1995,*
Advisors: *Dr. Alex Pentland,*
University: *Massachusetts Institute of Technology.*

Ph.D. Thesis

Title: “*Wearable Computing and Contextual Awareness.*”
Date Completed: *June 1999,*
Advisor: *Dr. Alex Pentland,*
University: *Massachusetts Institute of Technology.*

B. Published Journal Papers (refereed)

- B.1 Friedmann M., T. Starner, and A. Pentland. “Synchronization in Virtual Realities.” In *Presence*, Volume 1 (1), pp. 139–144, MIT Press, Spring 1991.
- B.2 Azarbayejani, A., T. Starner, B. Horowitz, and A. Pentland. “Visually Controlled Graphics.” In *IEEE Transactions on Pattern Analysis and Machine Intelligence*, Volume 15 (6), pp. 602–605, IEEE Computer Society Press, June 1993.
- B.3 Starner, T., “Human Powered Wearable Computing”, In *IBM Systems Journal*, Volume 35 (3), pp. 618–629, 1996.
- B.4 Wren, C., F. Sparacino, A. Azarbayejani, T. Darrell, T. Starner, A. Kotani, C. Chao, M. Hlavac, K. Russell, and A. Pentland, “Perceptive Spaces for Performance and Entertainment: Untethered Interaction Using Computer Vision and Audition”, In *Applied Artificial Intelligence Journal*, Volume 11 (4), pp. 267–284, June 1997.
- B.5 Starner, T., S. Mann, B. Rhodes, J. Levine, J. Healey, D. Kirsch, R. Picard, and A. Pentland, “Augmented Reality Through Wearable Computing”, In *Presence*, Volume 6 (4), pp. 386-398, Winter 1997.
- B.6 Starner, T., J. Weaver, and A. Pentland, “A Wearable Computing Based American Sign Language Recognizer”, In *Personal and Ubiquitous Computing*, Volume 1 (4), 1997.
- B.7 Starner, T., J. Weaver, and A. Pentland, “Real-Time American Sign Language Recognition Using Desk and Wearable Computer-Based Video”, In *IEEE Transactions on Pattern Analysis and Machine Intelligence*, Volume 20 (12), pp. 1371–1375, December 1998.
- B.8 Starner, T. and Y. Maguire, “Heat Dissipation in Wearable Computers Aided by Thermal Coupling with the User”, In *ACM Journal on Mobile Networks and Applications (MONET)*, Special Issue on Wearable Computers, Volume 4 (1), pp. 3–13, 1999.
- B.9 Leibe B., T. Starner, W. Ribarsky, Z. Wartell, D. Krum, J. Weeks, B. Singletary, and L. Hodges, “Towards Spontaneous Interaction with the Perceptive Workbench”, In *IEEE Computer Graphics and Applications*, Volume 20 (6), pp. 54–65, November 2000.
- B.10 Starner, T., B. Leibe, D. Minnen, T. Westeyn, A. Hurst, and J. Weeks, “The perceptive workbench: Computer-vision-based gesture tracking, object tracking, and 3D reconstruction for augmented desks”, In *Machine Vision and Applications*, Volume 14 (1), pp. 59–71, 2003.

- B.11 Ashbrook, D., and T. Starner, “Using GPS to Learn Significant Locations and Predict Movement Across Multiple Users”, In *Personal and Ubiquitous Computing*, Volume 7 (5), pp. 275-296, October 2003.
- B.12 Paradiso, J., and T. Starner, “Energy Scavenging for Mobile and Wireless Electronics”, *IEEE Pervasive Computing*, Volume 4(1), pp. 18-27, January 2005.
- B.13 K. Lyons, T. Starner, and B. Gain. “Experimental Evaluations of the Twiddler One-handed Chording Mobile Keyboard.” *HCI Journal* 21(4), pp. 343-392. Winter 2006.
- B.14 J. Ward, P. Lukowicz, G. Tröster, and T. Starner. “Activity Recognition of Assembly Tasks Using Body-Worn Microphones and Accelerometers” *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)* 28(10): pp. 1553–1567, October, 2006.
- B.15 J. Kientz, G. Hayes, T. Westeyn, T. Starner, and G. Abowd. “Pervasive Computing and Autism: Assisting Caregivers of Children with Special Needs.” *IEEE Pervasive Computing* 6(1): pp. 28-35, 2007.
- B.16 T. Westeyn, G. Abowd, T. Starner, J. Johnson, P. Presti, and K. Weaver. “Monitoring children’s developmental progress using augmented toys and activity recognition.” *Personal and Ubiquitous Computing* 16(2): pp. 169-191, 2012. **Selected by ACM as a “Best Paper of 2012.”**
- B.17 D. Kohlsdorf and T. Starner. “MAGIC Summoning: Towards automatic suggesting and testing of gestures with low probability of false positives during use.” *Journal of Machine Learning Research* 14: pp. 209-242, January 2013.
- B.18 M. Jackson, G. Valentin, L. Freil, L. Burkeen, C. Zeagler, S. Gilliland, B. Currier, and T. Starner. “FIDO - Facilitating Interactions for Dogs with Occupations: Wearable Communication Interfaces for Working Dogs.” *Personal and Ubiquitous Computing*. 19(1): pp. 155-173, 2015.
- B.19 A. Guo, X. Wu, Z. Shen, T. Starner, S. Gilliland, and H. Baumann. “Order Picking with Head-Up Displays.” *IEEE Computer*. 48(6): pp. 16-24, June 2015.
- B.20 A. Bedri, H. Sahni, P. Thukral, T. Starner, D. Byrd, P. Presti, G. Reyes, Z. Gue, and M. Ghovanloo. “Silent Speech and Jaw Gesture Control for Wearable Computers.” *IEEE Computer*, October 2015.
- B.21 D. Kohlsdorf, D. Herzing, and T. Starner. “Methods for Discovering Models of Behavior: A Case Study with Wild Atlantic Spotted Dolphins.” *Animal Behavior and Cognition* 3(4): pp. 265–287, November 2016.
- B.22 C. Byrne, L. Freil, T. Starner, and M. Jackson. “A Method to Evaluate Haptic Interfaces for Working Dogs.” *International Journal of Human-Computer Studies (IJHCS)*, 98: pp. 196–207, February 2017.
- B.23 C. Zhang, S. Hersek, Y. Pu, D. Sun, Q. Xue, T. Starner, G. Abowd, and O. Inan. “Bioacoustics-based human body mediated communication.” *IEEE Computer*, Special issue on Human Augmentation 50(2): February 2017.
- B.24 L. Freil, C. Byrne, G. Valentin, C. Zeagler, D. Roberts, T. Starner, M. Jackson “Canine-Centered Computing.” *Foundation and Trends in Human–Computer Interaction*. 10(2), pp. 87–164, April 2017.

- B.25 A. Bedri, R. Li, M. Haynes, R. Kosaraju, I. Grover, T. Priouveau, M. Beh, M. Goel, T. Starner, and G. Abowd. “EarBit: Using Wearable Sensors to Detect Eating Episodes in Unconstrained Environments.” *ACM Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)*. Volume 1 (3), Article 37, September 2017.
- B.26 C. Seim, N. Doering, Y. Zhang, W. Stuerzlinger, and T. Starner. “Passive Haptic Training to Improve Speed and Performance on a Keypad.” *ACM Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)*. Volume 1 (3), Article 100, September 2017.
- B.27 C. Zhang, A. Waghmare, P. Kundra, V. Pu, S. Gilliland, T. Ploetz, T. Starner, O. Inan, G. Abowd. “Fingersound: Recognizing unistroke thumb gestures using a ring.” *ACM Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)*. Volume 1 (3), Article 120, September 2017.
- B.28 G. Reyes, J. Wu, N. Juneja, M. Goldshtein, K. Edwards, G. Abowd, and T. Starner. “SynchroWatch: One-Handed Synchronous Smartwatch Gestures Using Correlation and Magnetic Sensing.” *ACM Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)* Volume 1 (4), Article 158, December 2017.
- B.29 C. Byrne, J. Zuerndorfer, L. Freil, X. Han, A. Sirolly, S. Gilliland, T. Starner, and M. Jackson. “Predicting the Suitability of Service Animals Using Instrumented Dog Toys.” *ACM Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)* Volume 1 (4), December 2017.
- B.30 M. Haynes and T. Starner. “Effects of Lateral Eye Displacement on Comfort While Reading from a Video Display Terminal.” *ACM Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)* Volume 1 (4), December 2017.
- B.31 N. Arora, S. Zhang, F. Shahmiri, D. Osorio, Y. Wang, M. Gupta, Z. Wang, T. Starner, Z. L. Wang, and G. Abowd. “SATURN: A thin and flexible self-powered microphone leveraging triboelectric nanogenerator.” *ACM Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)* Volume 2 (2), June 2018.

C. Published Books, Parts of Books, and Edited Volumes

C.1. Books

- C.1.1 Siewiorek, D., A. Smailagic, and T. Starner. “Application Design for Wearable Computing.” *Synthesis Lecture Series Monograph*, Morgan & Claypool, 2008.
- C.1.2 Zeagler, C., T. Starner, T. Hall, and M. Sala. “Meeting the Challenge: The Path Towards a Consumer Wearable Computer.” Georgia Institute of Technology, 2015.

C.2. Chapters in Books

- C.2.1 Pentland, A., I. Essa, M. Friedman, B. Horowitz, S. Sclaroff, and T. Starner. “The Thing-World Modeling System.” *In Algorithms and Parallel VLSI Architectures*, pp. 425–434. E.F. Depreitere (editor), Elsevier Press, 1991.
- C.2.2 Friedmann, M., and T. Starner, and A. Pentland. “Device Synchronization Using an Optimal Linear Filter.” *In Virtual Reality Systems*, Earnshaw, Gigante, and Jones (editors), Academic Press, pp. 119-132, 1993.
- C.2.3 Starner, T. and A. Pentland. “Real-Time American Sign Language Recognition from Video Using Hidden Markov Models.” *In Motion-Based Recognition*, M. Shah and R. Jain (editors), Kluwer Academic Publishers, Computational Imaging and Vision Series, pp. 227-243, 1996.

- C.2.4 Starner, T., J. Weaver, and A. Pentland. “A Wearable Computer Based American Sign Language Recognizer.” *In Assistive Technology and Artificial Intelligence*, V. Mittal, H. Yanco, J. Aronis (editors), Springer Verlag, AI Series, pp. 84–96, 1998.
- C.2.5 Starner, T., B. Schiele, B. Rhodes, T. Jebara, N. Oliver, J. Weaver, and A. Pentland. “Augmented Realities Integrating User and Physical Models.” *In Augmented Reality: Placing Artificial Objects in Real Scenes*, R. Behringer, G. Klinker, G. J. Klintner, and D. Mizell (editors), A. K. Peters Ltd., pp. 73-79, December, 1999.
- C.2.6 Schiele, B., T. Starner, B. Rhodes, B. Clarkson, and A. Pentland. “Situation Aware Computing with Wearable Computers.” *In Fundamentals of Wearable Computers and Augmented Reality*, W. Barfield and T. Caudell (editors), Lawrence Erlbaum Press, pp. 511-538, 2001.
- C.2.7 Starner, T. and B. Rhodes. “Wearable Computers.” *In Encyclopedia of Human-Computer Interaction*, W. Bainbridge (editor), Berkshire Publishing, Volume 2, pp. 797-802, 2004.
- C.2.8 Starner, T. and Paradiso, J. “Human Generated Power for Mobile Electronics.” *In Low Power Electronics Design*, C. Piguet (editor), CRC Press, Chapter 45, pp. 45-1 – 45-35, 2004.
- C.2.9 Gandy, M., T. Westeyn, H. Brashear, and T. Starner. “Wearable Systems Design Issues for the Elderly and Disabled.” *In Smart Technology for Aging, Disability and Independence: Computer and Engineering Design and Applications*, Wiley, Volume 2, Chapter 3.9, 2007
- C.2.10 Siewiorek, D., Smailagic, A., and T. Starner. “Wearable Computers” *In The Human-Computer Interaction Handbook: fundamentals, evolving technologies, and emerging applications, second edition*, Sears, A. and Jacko, J. (eds.), CRC Press, Chapter 16, pp. 295–312, 2008.
- C.2.11 Ashbrook, D., Lyons, K., Clawson, J., and T. Starner. “Methods of Evaluation for Wearable Computing.” *In Gilsoo Cho, editor, Smart Clothing: Technology and Applications*. pp. 229-248, CRC Press, 2009.
- C.2.12 Siewiorek, D., Smailagic, A., and T. Starner. “Wearable Computers” *In The Human-Computer Interaction Handbook: fundamentals, evolving technologies, and emerging applications, third edition*, Sears, A. and Jacko, J. (eds.), CRC Press, 2012.
- C.2.13 Starner, T. “Wearable Computing: Meeting the Challenge.” *In Fundamentals of Wearable Computers and Augmented Reality 2nd edition*, W. Barfield and B. Thomas (editors), CRC Press, 2015.
- C.2.14 Kohlsdorf, D. and Starner, T. “MAGIC Summoning: Towards Automatic Suggesting and Testing of Gestures with Low Probability of False Positives During Use.” *In Gesture Recognition. The Springer Series on Challenges in Machine Learning*. S. Escalera, I. Guyon, and V. Athitsos (editors), Springer, 2017.

C.3. Edited Volumes

- C.3.1 *Personal and Ubiquitous Computing* journal Volume 17, Issue 3, 2013. Guest editor for special issue on Wearable Computing (with Tom Martin).
- C.3.2 *IEEE Computer* magazine June 2015. Guest editor for special issue on Wearable Computing (with Tom Martin).

D. Conference Presentations

D.1. Invited Keynote and Distinguished Lecture Addresses

- D.1.1 “Wearable Computing.” *Ball State University Distinguished Colloquium Series*, 600 attendees. Muncie, IN, September 1996.
- D.1.2 “Wearable Computing and Augmented Reality.” Invited banquet speaker at *International Conference on Robotics and Automation (ICRA)*. 800 attendees. Albuquerque, NM, April 1997.
- D.1.3 “Wearables Life.” One of three invited keynotes at *Wearables Tokyo Symposium at Nicograph*. 1000 attendees. Tokyo, Japan, November 1998.
- D.1.4 “Wearable Computing Life.” One of three invited keynotes at *Fashion Institute of Technology annual faculty convocation*,. 70 attendees. New York, NY, May 1999.
- D.1.5 “The Everyday Use of Wearable Computers.” Invited keynote at *Interaction Homme-Machine (IHM)*. 200 attendees. Montpellier, France, November 1999.
- D.1.6 “Fundamental Problems in Wearable Computing.” Invited plenary at *Second Congreso Internacional de Ingenieria Electronica*. 1000 attendees. Veracruz, Mexico, March 2001.
- D.1.7 “Creating Intelligent Agents with Wearable Computers.” Invited keynote and paper. *Interaction2002* (annual conference sponsored by the Human Interface (SIGHI) and Groupware and Network Services (SIGGN) special interest groups of the Information Processing Society of Japan). 200 attendees. Tokyo, Japan. March 2002.
- D.1.8 “Creating Intelligent Agents with Wearable Computers.” *Princeton Distinguished Lecture in Pervasive Computing*. 150 attendees. Princeton, NJ, April 2002.
- D.1.9 “Wearable Computers as Intelligent Agents,” Invited plenary at *Man-Machine Symbiotic Systems*. 180 attendees. Kyoto, Japan, November 2002.
- D.1.10 “Wearable Computers as Intelligent Agents,” Distinguished Lecture at *University of Linz Computer Science Colloquium*. 200 attendees. Linz, Austria, November 2002.
- D.1.11 “Mobile One-Way Translator for American Sign Language.” One of three keynotes at *Applied Imagery Pattern Recognition (AIPR)*. 70 attendees. Cosmos Club, Washington, DC, October 2003.
- D.1.12 “Mobile Interfaces for Entertainment.” One of three keynotes at *ACM Conference for Advances in Computer Entertainment*. 200 attendees. Singapore, June 2004.
- D.1.13 “Wearable Computing: A Modern Lifestyle.” One of the six invited plenary speakers at *ICMIT*. 400 attendees. Chongqing, China, September 2005.
- D.1.14 “The virtual patrol: capturing and accessing information for the soldier in the field” Keynote for ACM Workshop on Continuous Archival and Retrieval of Personal Experiences (CARPE). 20 attendees. Santa Barbara, CA. October 2006.
- D.1.15 “Reading Your Mind: Interfaces for Wearable Computing.” USAA Distinguished Lecture. 400 attendees. San Antonio, TX, June 2008
- D.1.16 “Toward Assistive Technologies for Deaf Education.” Wilson Lecture for Research Council on Mathematics Learning. Rome, GA, March 2009.
- D.1.17 “Passive Haptic Rehabilitation Using Wearable Computers.” Keynote for Workshop on IT for Disabilities (IT4D). Wroclaw, Poland, September 2012.

- D.1.18 “Wearable Computing: Through the Looking Glass.” Keynote for Federated Conference on Computer Science and Information Systems (FedCSIS). Wroclaw, Poland, September 2012.
- D.1.19 “Wearable Computing: Through the Looking Glass.” Keynote for International Workshop on Mobile Computing Systems and Applications (Hotmobile). 90 attendees. Jekyll Island, GA, February 2013.
- D.1.20 “Wearable Computing: Through the Looking Glass.” Keynote for Augmented Human. 150 attendees. Stuttgart, Germany, March 2013.
- D.1.21 “Symbiotic AI: an approach to artificial intelligence through first-person sensing.” Keynote for International Joint Conference on Artificial Intelligence. 1000 attendees. Beijing, China, August 2013.
- D.1.22 “Wearable Computing: Through the Looking Glass.” Joint keynote UbiComp/Pervasive/ISWC. 700 attendees. Zurich, Switzerland. September 2013.
- D.1.23 “Wearable Computing: Through the Looking Glass.” Grace Hopper Invited Technical Speaker. 500 attendees. Minneapolis, Minnesota. October 2013.
- D.1.24 “Wearable Computing: Through the Looking Glass.” CMU Distinguished Visiting Faculty Lecture. 300 attendees. Pittsburgh, Pennsylvania. October 2013.
- D.1.25 “Using Wearable Computers for Passive Learning and Rehabilitation.” TedxSalford. 1900 attendees. MediaCity Manchester, UK. November 2013.
- D.1.26 “Lowering Barriers with Google Glass.” Keynote for AgeTech West. 200 attendees. San Jose, CA. November 2013.
- D.1.27 “Wearable Computing: Through the Looking Glass.” Keynote for SIGGRAPH Asia. 300 attendees. Hong Kong. November 2013.
- D.1.28 “Symbiotic AI — An Approach to Artificial Intelligence Using First-Person Sensing.” Keynote for Symposium on Eye Tracking Research and Applications (ETRA). 120 attendees. Safety Harbor, FL. March 2014.
- D.1.29 “Breaking Barriers with Glass.” Keynote for Georgia Tech Healthy Environments and Active Lifestyles (HEAL) Open House. 50 attendees. Atlanta, GA. April 2014.
- D.1.30 “Symbiotic AI: An Approach to Artificial Intelligence Using First-Person Sensing.” Keynote for International Florida Artificial Intelligence Research Society Conference (FLAIRS). 150 attendees. Pensacola Beach, FL. May 2014.
- D.1.31 “Wearable Computing: Through the Looking Glass.” Keynote at Qualcomm QTECH Forum. 150 attendees. San Diego, CA. June 2014.
- D.1.32 D. Herzog and T. Starner. “Dolphin Communication: Cracking the Code.” Georgia Tech IPaT Distinguished Lecture. 110 attendees. Atlanta, GA. October 2015.
- D.1.33 T. Starner. “An Extension of Self: The Present and Future of Wearable Computing.” University of Maryland Baltimore County Interactive Systems Distinguished Lecture. 60 attendees. Baltimore, MD. November 2015.
- D.1.34 T. Starner. “Superpowers Through Wearable Computing.” Keynote for Third Wearable Device & Technology Expo. 700 attendees. Tokyo, Japan. January 2017.
- D.1.35 T. Starner and M. Jackson. “Not Your Mama’s Wearable Computer.” SXSW. 400 attendees. Austin, TX. March 2017.

- D.1.36 D. Herzing and T. Starner. “Dolphin Communication: Cracking the Code.” Talks at Google (livestream & YouTube). Mountain View, CA. March 2017.
- D.1.37 T. Starner. “Augmented Senses, Augmented Intellect, and Augmented Reality - from early work to current applications.” CHI Workshop on Amplification and Augmentation of Human Perception. 40 attendees. Denver, CO. May 2017.
- D.1.38 T. Starner. “Small, Lightweight and Fast: A Near Future of On-the-go AR and Wearables.” Keynote for International Conference on Artificial Reality and Telexistence & Eurographics Symposium on Virtual Environments (ICAT-EGVE). 100 attendees. Adelaide, Australia. November 2017.
- D.1.39 T. Starner. “Do Wearable Users Want an Immersive Display?” Keynote for Fourth Wearable Device & Technology Expo. 1000 attendees. Tokyo, Japan. January 2018.
- D.1.40 T. Starner. “Wearable Computing - an extension of self.” Closing keynote for SciFest. Montreal, Canada. July 2018.
- D.1.41 T. Starner. “Symbiotic AI: Using wearable devices to teach computers how to live in a human world.” Keynote for AI+Wearables. Tianjin, China. September 2018.
- D.1.42 T. Starner. “Do users want immersive displays?” Keynote for Eyewear workshop at Ubicomp/ISWC. Singapore. October 2018.
- D.1.43 T. Starner. “Symbiotic AI: Using Wearable Computers to Teach Computers How to Live in a Human World.” Keynote for Texas Wireless Summit. Austin, TX. November 2018.
- D.1.44 T. Starner. “Symbiotic AI: Using Wearable Devices to Teach Computers How to Live in a Human World.” Keynote for Second NIPS Workshop on Machine Learning on the Phone and other Consumer Devices (MLPCD 2). Montreal, Quebec. December 2018

D.2. Conference Presentations with Proceedings (refereed and highly competitive)

[Short or long papers in stringently reviewed, international conferences with low acceptance rates.]

- D.2.1 Friedmann, M., T. Starner, and A. Pentland. “Device Synchronization Using an Optimal Linear Filter.” In *ACM Proceedings of the Symposium on Interactive 3D Graphics*, Volume 26 (2), pp. 57-62, ACM Press, March 1992.
- D.2.2 Pentland, A., B. Moghaddam, and T. Starner. “View-Based and Modular Eigenspaces for Face Recognition.” In *IEEE Proceedings of Computer Vision and Pattern Recognition Conference*, pp. 84-91, Seattle, WA, July 1994.
- D.2.3 Starner, T., J. Makhoul, R. Schwartz, and G. Chou. “On-line Cursive Handwriting Recognition Using Speech Recognition Methods.” In *IEEE Proceedings International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, pp. 125-128, April 1994.
- D.2.4 Starner, T. and A. Pentland. “Visual Recognition of American Sign Language Using Hidden Markov Models.” In *IEEE International Workshop on Automatic Face and Gesture Recognition*, pp. 189-194, Zurich, Switzerland, 1995.
- D.2.5 Starner, T. and A. Pentland. “Real-Time American Sign Language Recognition from Video Using Hidden Markov Models.” In *IEEE International Symposium on Computer Vision*, pp. 265-270, Coral Gables, FL, 1995
- D.2.6 Rhodes, B. and T. Starner. “Remembrance Agent: A continuously running automated information retrieval system.” In *Proc. of Pract. App. of Intelligent Agents and Multi-Agent Tech (PAAM)*, London, April, 1996.

- D.2.7 Starner, T. and A. Pentland. "Real-Time American Sign Language Recognition from Video Using Hidden Markov Models." In *AAAI Fall Symposium on Disabilities*. Cambridge, MA, November 1996.
- D.2.8 Jebara, T., C. Eyster, J. Weaver, T. Starner, and A. Pentland, "Stochasticks: Augmenting the Billiards Experience with Probabilistic Vision and Wearable Computers." *IEEE International Symposium on Wearable Computers*, Cambridge, MA, October 1997. [20 papers accepted for oral presentation of 110 submissions (18%). Overall acceptance was 34 (31%).] [18%]
- D.2.9 Starner, T., J. Weaver, and A. Pentland, "A Wearable Computing Based American Sign Language Recognizer." *IEEE International Symposium on Wearable Computers*, Cambridge, MA, October 1997. pp. 140–149. [20 papers accepted for oral presentation of 110 submissions (18%). Overall acceptance was 34 (31%).] [18%]
- D.2.10 Starner, T. and Y. Maguire, "A Heat Dissipation Tutorial for Wearable Computing." *IEEE International Symposium on Wearable Computers*, Pittsburgh, PA, October 1998. [~30%]
- D.2.11 Starner, T., B. Schiele, and A. Pentland, "Visual Contextual Awareness in Wearable Computing." *IEEE International Symposium on Wearable Computers*, Pittsburgh, PA, October 1998. pp. 50–57. [~30%]
- D.2.12 Starner, T., B. Schiele, B. Rhodes, T. Jebara, N. Oliver, J. Weaver, and A. Pentland. "Augmented Realities Integrating User and Physical Models." In *IEEE International Workshop on Augmented Reality*, San Francisco, CA, November 1998.
- D.2.13 T. Starner, B. Leibe, B. Singletary, and J. Pair. "MIND-WARPING: Towards Creating a Compelling Collaborative Augmented Reality Game." In *Proc. of ACM Intelligent User Interfaces*, New Orleans, LA, January 2000, pp. 256-259. [~30%]
- D.2.14 B. Leibe, T. Starner, W. Ribarsky, Z. Wartell, D. Krum, B. Singletary, and L. Hodges, "The Perceptive Workbench: Towards Spontaneous and Natural Interaction in Semi-Immersive Virtual Environments." *IEEE Virtual Reality*, New Brunswick, NJ, March 2000, pp. 13-20. **Best Paper Award**. [31 papers accepted for oral presentation of 93 submitted (33%). Overall acceptance was 44 (47%)] [33%]
- D.2.15 W. Rungsrarityotin and T. Starner, "Finding Location Using Omnidirectional Video on a Wearable Computing Platform." *IEEE International Symposium on Wearable Computers*, Atlanta, GA, October 2000, pp. 61-68. [18 papers accepted for oral presentation of 57 paper submissions (32%).] [32%]
- D.2.16 T. Starner, J. Auxier, D. Ashbrook, and M. Gandy. "The Gesture Pendant: A Self-illuminating, Wearable, Infrared Computer Vision System for Home Automation Control and Medical Monitoring." *IEEE International Symposium on Wearable Computers*, Atlanta, GA, October 2000, pp. 87-94. [18 papers accepted for oral presentation of 57 paper submissions (32%).] [32%]
- D.2.17 B. Leibe, D. Minnen, J. Weeks, and T. Starner, "Integration of Wireless Gesture Tracking, Object Tracking, and 3D Reconstruction in the Perceptive Workbench." Intl. Conf. on Computer Vision Systems, Vancouver, Canada, July 2001, pp. 73-92. [8% acceptance rate for oral presentations. Overall acceptance rate 28%.] [8%]
- D.2.18 K. Lyons and T. Starner, "Mobile Capture for Wearable Computer Usability Testing." *IEEE International Symposium on Wearable Computers*, Zurich, Switzerland, October 2001, pp. 69-76. [~30%]
- D.2.19 D. Ashbrook and T. Starner, "Learning Significant Locations and Predicting User Movement with GPS." *IEEE International Symposium on Wearable Computers*, Seattle, WA, October 2002, pp. 101–108. [21 papers accepted for oral presentation of 109 submissions (19%). Overall acceptance was 45 (41%)] [19%]

- D.2.20 D. Krum, O. Omoteso, W. Ribarsky, T. Starner, and L. Hodges. “Evaluation of a multimodal interface for 3D terrain visualization.” *IEEE Conference on Visualization (VIS)*, pp. 411-418, Washington, DC, 2002. [58 of 172 papers accepted.] [34%]
- D.2.21 Minnen, D., I. Essa, and T. Starner, “Expectation Grammars: Leveraging High-Level Expectations for Activity Recognition” In *IEEE Proceedings of Computer Vision and Pattern Recognition Conference 2003*, Madison, Wisconsin, June 2003. pp. II-626–II-632. [Poster: 149 papers accepted for presentation of 900 submissions (23%).] [23%]
- D.2.22 H. Brashear, T. Starner, P. Lukowicz, H. Junker, “Using Multiple Sensors for Mobile Sign Language Recognition.” *IEEE International Symposium on Wearable Computers*, White Plains, WA, October 2003, pp. 45-53. [22 papers accepted for presentation of 51 paper submissions (43%).] [43%]
- D.2.23 M. Stäger, P. Lukowicz, N. Perera, T. von Büren, G. Tröster, and T. Starner, “SoundButton: Design of a Low Power Wearable Audio Classification System.” *IEEE International Symposium on Wearable Computers*, White Plains, WA, October 2003, pp. 12-16. [22 papers accepted for presentation of 51 paper submissions (43%).] [43%]
- D.2.24 T. Westeyn, H. Brashear, A. Atrash, and T. Starner, “Georgia Tech Gesture Toolkit: supporting experiments in gesture recognition.” In *ACM International Conference on Multimodal Interfaces*, Vancouver, BC, November 2003, pp. 85-92. [20 full papers accepted for oral presentation out of 128 submissions (16%). Overall acceptance was 49 (38%).] [16%]
- D.2.25 K. Lyons, T. Starner, D. Plaisted, J. Fusia, A. Lyons, A. Drew, and E. Looney, “Twiddler Typing: One-Handed Chording Text Entry for Mobile Phones”, In *ACM Conference Human Factors in Computing Systems* Vienna, Austria, April 2004, pp. 671-678. [93 papers accepted out of 572 submissions (16%).] [16%]
- D.2.26 T. Starner, C. Snoeck, B. Wong, and R. McGuire, “Use of Mobile Appointment Scheduling Devices”, In *ACM Conference Human Factors in Computing Systems*, Vienna, Austria, April 2004. pp. 1501–1504. [Short Paper: 19% of short papers accepted.] [19%]
- D.2.27 P. Lukowicz, J. Ward, H. Junker, M. Stäger, G. Tröster, A. Atrash, T. Starner, “Recognizing Workshop Activity Using Body Worn Microphones and Accelerometers”, In *Pervasive Computing* 2004. pp. 18–22. [19 papers accepted out of 212 submissions. Overall acceptance was 27 (13%).] [9%]
- D.2.28 K. Lyons, T. Starner, and D. Plaisted. “Expert Typing Using the Twiddler One Handed Chord Keyboard.” *IEEE International Symposium on Wearable Computers*, Washington, DC, October 2004. pp. 94–101. [23% of long papers accepted. 29% acceptance overall.] [23%]
- D.2.29 C. Metzger, M. Anderson, and T. Starner. “FreeDigiter: A Contact-free Device for Gesture Control.” *IEEE International Symposium on Wearable Computers*, Washington, DC, October 2004. pp. 18–21. [Short Paper: 29% acceptance overall.] [29%]
- D.2.30 K. Lyons, C. Skeels, T. Starner, C. Snoeck, B. Wong, D. Ashbrook. “Augmenting Conversations Using Dual–Purpose Speech.” *User Interface and Software Technology (UIST)*, Santa Fe, NM, November 2004. pp. 237–246. [24 long papers accepted out of 118 submitted. 20% acceptance rate.] [20%]
- D.2.31 E. Clarkson, J. Clawson, K. Lyons, and T. Starner. “An Empirical Study of Typing Rates on mini-QWERTY Keyboards.” *CHI*, Portland, Oregon, April 2005. pp. 1288–1291. [Short Paper: 25% short papers accepted.] [25%]
- D.2.32 D. Minnen, T. Starner, J. A. Ward, P. Lukowicz, G. Tröster. “Recognizing and Discovering Human Actions from On-body Sensor Data”, *ICME*, Amsterdam, The Netherlands, July 2005. [Poster: Acceptance rate was approximately 25% in 2004.] [~25%]

- D.2.33 K. Lyons, C. Skeels, and T. Starner. “Providing Support for Mobile Calendaring Conversations: An Evaluation of Dual-Purpose Speech.” *Mobile HCI*, September 2005. [Short Paper: 21% acceptance rate of short papers submitted.] [21%]
- D.2.34 T. Westeyn, X. Bian, K. Vadas, T. Starner, and G. Abowd. “Recognizing Mimicked Autistic Self-Stimulatory Behaviors Using Hidden Markov Models.” *ISWC*, October 2005. [Short Paper: 4 short papers accepted of 35 submitted, including this one (11%). 8 long papers converted to short papers leading to a 34% acceptance rate.] [34%]
- D.2.35 J. Clawson, K. Lyons, T. Starner, and E. Clarkson. “The Impact of Limited Visual Feedback on Mobile Text Entry Using the mini-QWERTY and Twiddler Keyboards.” *ISWC*, October 2005. [16 full papers accepted from 63 submitted (25%); **Best Paper nomination.**] [25%]
- D.2.36 G. Schindler, T. Starner, and C. Metzger. “A Wearable Interface for Topological Mapping and Localization in Indoor Environments.” *International workshop on location and context awareness (LOCA)*, Dublin, Ireland. May 2006. [Full paper 24% acceptance rate.] [24%]
- D.2.37 K. Vadas, N. Patel, K. Lyons, T. Starner, and J. Jacko. “Reading On-the-Go: A Comparison of Audio and Hand-held Displays.” *Mobile HCI*, September 2006. [Full paper 24% acceptance rate.] [24%]
- D.2.38 H. Brashear, K. Park, S. Lee, V. Henderson, H. Hamilton, and T. Starner. “American Sign Language Recognition in Game Development for Deaf Children.” *ACM SIGACCESS Conference on Computers and Accessibility (ASSETS)*, pp. 79–86, Portland, Oregon. October, 2006. [33%]
- D.2.39 D. Minnen, T. Starner, I. Essa, and C. Isbell. “Discovering Characteristic Actions from On-Body Sensor Data.” In *IEEE International Symposium on Wearable Computers*, Montreux, Switzerland, October 2006. [Best Paper nomination. 8 long papers accepted of 44 submitted.] [18%]
- D.2.40 D. Minnen, T. Starner, I. Essa, C. Isbell. “Improving Activity Discovery with Automatic Neighborhood Estimation.” *Int. Joint Conf. on Artificial Intelligence (IJCAI)*, Hyderabad, India, January 2007. [Full paper poster 35% acceptance rate.] [35%]
- D.2.41 D. Minnen, T. Westeyn, and T. Starner. “Recognizing Soldier Activities in the Field.” *Body Sensor Networks (BSN)*, Aachen, Germany, March 2007.
- D.2.42 J. Clawson, A. Rudnick, K. Lyons, and T. Starner. “Automatic Whiteout: Discovery and Correction of Typographical Errors in Mobile Text Input.” *ACM MobileHCI*, New York, NY, USA, September 2007. [168 full and short submissions, of which 22% presented.] [22%]
- D.2.43 E. Clarkson, K. Lyons, J. Clawson, and T. Starner. “Revisiting and Validating a Model of Two-Thumb Text Entry.” *ACM Conference Human Factors in Computing Systems (CHI)*, New York, USA, May 2007. [Short paper, approx. 25% acceptance rate.] [25%]
- D.2.44 D. Minnen, C. Isbell, I. Essa, and T. Starner. “Discovering Multivariate Motifs using Sequence Density Estimation and Greedy Mixture Learning.” *AAAI*, pp. 615–620, Vancouver, Canada, July 2007. [27.5%]
- D.2.45 D. Minnen, T. Starner, I. Essa, and C. Isbell. “Discovering Variable-Length Motifs in Multivariate Data Streams using Bayesian Surprise,” in *Proceedings of International Conference on Knowledge Discovery and Data Mining (KDDM)*, Rio de Janeiro, Brazil, August 2007.
- D.2.46 V. Henderson-Summet, R. Grinter, J. Carroll, and T. Starner. “Electronic Communication: Themes from a Case Study of the Deaf Community.” *INTERACT*, pp. 347-360, Rio de Janeiro, Brazil, September 2007. [33%]
- D.2.47 D. Minnen, C. Isbell, I. Essa, and T. Starner. “Detecting Subdimensional Motifs: An Efficient Algorithm for Generalized Multivariate Pattern Discovery.” *ICDM*, pp. 601–606, Omaha, NE, October 2007. [20%]

- D.2.48 T. Deyle, S. Palinko, E. Poole, and T. Starner. “Hambone: a bio-acoustic gesture interface.” [17.5%] IEEE ISWC, pp. 3–10, Boston, MA, October 2007. [**Best paper nomination.** *Of 40 full papers submitted, 7 were accepted as full papers for a 17.5% acceptance rate.*]
- D.2.49 J. Kim, J. He, K. Lyons, and T. Starner. “The Gesture Watch: A Wireless Contact-free [17.5%] Gesture-based Wrist Interface.” IEEE ISWC, pp. 15–22, Boston, MA, October 2007. [*Of 40 full papers submitted, 7 were accepted as full papers for a 17.5% acceptance rate.*]
- D.2.50 P. Yin, I. Essa, J. Rehg, T. Starner. “Discriminative Feature Selection for Hidden Markov Mod- IEEE Conference on Acoustics, Speech, and Signal Processing (ICASSP), Las Vegas, Nevada, April 2008.
- D.2.51 J. Clawson, K. Lyons, A. Rudnick, R. Iannucci, and T. Starner. “Automatic whiteout++: [22%] correcting mini-QWERTY typing errors using keypress timing.” ACM Conference Human Factors in Computing Systems (CHI), pp. 573–582, April 2008. [*1055 submissions; 714 Papers and 341 Notes. 22% of Papers and 18% of Notes accepted.*]
- D.2.52 D. Ashbrook, J. Clawson, K. Lyons, T. Starner, and N. Patel. “Quickdraw: the impact of [18%] mobility and on-body placement on device access time.” ACM Conference Human Factors in Computing Systems (CHI), pp. 219–222, April 2008. [*1055 submissions; 714 Papers and 341 Notes. 22% of Papers and 18% of Notes accepted.*]
- D.2.53 K. Huang, E. Do, and T. Starner. “PianoTouch: A wearable haptic piano instruction system [31%] for passive learning of piano skills.” In Proceedings of IEEE International Symposium on Wearable Computing (ISWC), pp. 41-44, Pittsburgh, PA, October 2008. [*Of the 31 full and 17 short papers submitted, 8 long and 7 short were accepted for a overall paper acceptance rate of 31%.*]
- D.2.54 K. Kim, J. Summet, T. Starner, D. Ashbrook, M. Kapade, and I. Essa. “Localization and 3D [31%] Reconstruction of Urban Scenes Using GPS.” In Proceedings of IEEE International Symposium on Wearable Computing (ISWC), pp. 11-14, Pittsburgh, PA, October 2008. [*Of the 31 full and 17 short papers submitted, 8 long and 7 short were accepted for a overall paper acceptance rate of 31%.*]
- D.2.55 P. Yin, T. Starner, H. Hamilton, I. Essa, J. Rehg. “Learning Basic Units in American Sign IEEE Conference on Acoustics, Speech, and Signal Processing (ICASSP), Taipei, Taiwan, April 2009.
- D.2.56 N. Komor, S. Gilliland, J. Clawson, M. Bhardwaj, M. Garg, C. Zeagler, and T. Starner. “Is It [28%] Gropable? – Assessing the Impact of Mobility on Textile Interfaces.” IEEE ISWC, pp.71-74, Linz, Austria. September 2009.
- D.2.57 N. Patel, J. Clawson, and T. Starner. “A model of two-thumb chording on a phone keypad.” [18.5%] ACM MobileHCI, pp. 1–4. New York, USA, 2009. [**Best Short Paper nomination.** *176 submissions, 95 full and 81 short papers. 24.2% full; 18.5% short acceptance rate.*]
- D.2.58 K. Weaver, H. Baumann, T. Starner, H. Iben, and M. Lawo. “An empirical task analysis [22%] of warehouse order picking using head-mounted displays.” ACM CHI, pp. 1695-1704, 2010. [*1346 submissions, comprising 878 full papers and 468 notes; 22% accepted 22.*]
- D.2.59 S. Lee and T. Starner. “Buzzwear: alert perception in wearable tactile displays on the wrist”, [22%] ACM CHI, pp. 433-442, 2010. [*1346 submissions, comprising 878 full papers and 468 notes; 22% accepted 22.*]
- D.2.60 K. Huang, T. Starner, E. Do, G. Weinberg, D. Kohlsdorf, C. Ahlrichs, and R. Leibrandt. “Mo- [22%] bile music touch: mobile tactile stimulation for passive learning.” ACM CHI, pp. 791-800, 2010. [*1346 submissions, comprising 878 full papers and 468 notes; 22% accepted 22.*]

- D.2.61 D. Ashbrook and T. Starner. "MAGIC: a motion gesture design tool." ACM CHI, pp. 2159-2168, 2010. [1346 submissions, comprising 878 full papers and 468 notes; 22% accepted 22.] [22%]
- D.2.62 Z. Zafrulla, H. Brashear, H. Hamilton, and T. Starner. "A novel approach to american sign language (asl) phrase verification using reversed signing." Third IEEE Workshop on Computer Vision and Pattern Recognition for Human Communicative Behavior Analysis, pp. 48-55, 2010. [oral presentation rate 20%; 35% overall.] [20%]
- D.2.63 M. Mehta, T. Starner, M. Jackson, K. Babalola, and G. James. "Recognizing Sign Language from Brain Imaging." IEEE ICPR, pp. 3842-3845, Istanbul, Turkey, August 2010.
- D.2.64 Z. Zafrulla, H. Brashear, P. Yin, P. Presti, T. Starner, and H. Hamilton. "American Sign Language Phrase Verification in an Educational Game for Deaf Children." IEEE ICPR, pp. 3846-3849, Istanbul, Turkey, August 2010.
- D.2.65 K. Weaver, T. Starner, and H. Hamilton. "An evaluation of video intelligibility for novice american sign language learners on a mobile device." ACM ASSETS, pp. 107-114, Orlando, FL, October 2010. [31%]
- D.2.66 S. Gilliland, N. Komor, T. Starner, and C. Zeagler. "The Textile Interface Swatchbook: Creating Graphical User Interface-like Widgets with Conductive Embroidery," ISWC, October 2010. [13 full papers accepted from 62 submitted (21%); **Best Paper nomination.**] [21%]
- D.2.67 D. Kohlsdorf and T. Starner. "Mobile Music Touch: The Effect of Primary Tasks on Passively Learning Piano Sequences," ISWC, October 2010. [13 full papers accepted from 62 submitted (21%)] [21%]
- D.2.68 J. Clawson, N. Patel, and T. Starner. "Dancing in the Streets: The design and evaluation of a wearable health game," ISWC, October 2010. [21 papers accepted from 83 submitted (25%)] [25%]
- D.2.69 K. Walters, S. Lee, T. Starner, R. Leibrandt, and M. Lawo. "Touchfire: Towards a Glove-mounted Tactile Display for Rendering Temperature Readings for Firefighters," ISWC, October 2010. [21 papers accepted from 83 submitted (25%)] [25%]
- D.2.70 N. Patel, J. Clawson, N. Kang, S. Choi, T. Starner. "A study of cultural effects on mobile-located group photo sharing." ACM GROUP, pp. 121-130, 2010. [Of 101 submissions, 27 papers and 9 notes were accepted.] [~30%]
- D.2.71 D. Kohlsdorf, T. Starner, and D. Ashbrook. "MAGIC 2.0: A web tool for false positive prediction and prevention for gesture recognition systems." IEEE Automatic Face & Gesture Recognition (FG), pp. 1-6, 2011.
- D.2.72 Z. Zafrulla, H. Brashear, P. Presti, H. Hamilton, and T. Starner. "CopyCat: An American Sign Language Game for Deaf Children." IEEE Automatic Face & Gesture Recognition (FG), pp. 647-647, 2011.
- D.2.73 S. Lee, B. Li, and T. Starner. "AirTouch: Synchronizing in-air hand gesture and on-body tactile feedback to augment mobile gesture interaction," IEEE ISWC, June 2011. [6 full papers accepted from 31 submitted (19%)] [19%]
- D.2.74 K. Weaver and T. Starner. "We need to communicate!: helping hearing parents of deaf children learn American Sign Language." ACM ASSETS, pp. 91-98, 2011. [27 podium presentations accepted from 90 submissions.] [30%]
- D.2.75 H. Baumann, T. Starner, H. Iben, A. Lewandowski, and P. Zschaler. "Evaluation of graphical user-interfaces for order picking using head-mounted displays." ACM ICMI, pp. 377-384, 2011. [47 of 120 papers accepted.] [39%]

- D.2.76 Z. Zafrulla, H. Brashear, T. Starner, H. Hamilton, and P. Presti. “American sign language recognition with the Kinect.” ACM ICMI, pp. 279-286, 2011. [47 of 120 papers accepted.] [39%]
- D.2.77 C. Zeagler, S. Gilliland, H. Profita, and T. Starner. “Textile Interfaces: Embroidered Jog-Wheel, Beaded Tilt Sensor, Twisted Pair Ribbon, and Sound Sequins.” IEEE ISWC, Newcastle, UK, June 2012. [Short paper. Of the 50 full and 17 short papers submitted, 18 were accepted for a 27% paper acceptance rate. Including posters, the overall rate was 39%] [27%]
- D.2.78 M. Jackson, C. Zeagler, G. Valentin, A. Martin, V. Martin, A. Delawalla, W. Blount, S. Eiring, R. Hollis, Y. Kshirsagar, and T. Starner. “FIDO - Facilitating Interactions for Dogs with Occupations: Wearable Dog-Activated Interfaces.” IEEE ISWC, Zurich, Switzerland, September 2013. [Long paper. **Best paper award.** Of the 54 full papers submitted, 11 were accepted for a 20% paper acceptance rate. 23% acceptance rate for oral presentations; 31% acceptance rate including posters.] [20%]
- D.2.79 H. Profita, J. Clawson, S. Gilliland, C. Zeagler, T. Starner J. Budd, and E. Do. “Don’t Mind Me Touching My Wrist: A Case Study of Interacting with On-Body Technology in Public.” IEEE ISWC, Zurich, Switzerland, September 2013. [Full paper. Of the 54 full papers submitted, 11 were accepted for a 20% paper acceptance rate. 23% acceptance rate for oral presentations; 31% acceptance rate including posters.] [20%]
- D.2.80 A. Guo, S. Raghu, X. Xie, S. Ismail, X. Luo, J. Simoneau, S. Gilliland, H. Baumann, C. Southern, T. Starner. “A Comparison of Order Picking Assisted by Head-Up Display (HUD), Cart-Mounted Display (CMD), Light, and Paper Pick List.” ACM ISWC, Seattle, WA, September 2014. [Full paper. **Best paper nomination.** Of the 61 full papers submitted, 10 were accepted for a 17% paper acceptance rate. 25% acceptance rate for oral presentations; 33% acceptance rate including posters.] [17%]
- D.2.81 C. Seim, J. Chandler, K. DesPortes, S. Dhingra, M. Park, and T. Starner. “Passive Haptic Learning of Braille Typing” ACM ISWC, Seattle, WA, September 2014. [Full paper. Of the 61 full papers submitted, 10 were accepted for a 17% paper acceptance rate. 25% acceptance rate for oral presentations; 33% acceptance rate including posters.] [17%]
- D.2.82 H. Sahni, A. Bedri, P. Thukral, G. Reyes, Z. Guo, T. Starner, and M. Ghovanloo. “The Tongue and Ear Interface: A Wearable System for Silent Speech Recognition” ACM ISWC, Seattle, WA, September 2014. [Full paper. **Best paper nomination.** Of the 61 full papers submitted, 10 were accepted for a 17% paper acceptance rate. 25% acceptance rate for oral presentations; 33% acceptance rate including posters.] [17%]
- D.2.83 J. Clawson, T. Starner, D. Kohlsdorf, D. Quigley, and S. Gilliland. “Texting While Walking: An Evaluation of Mini-QWERTY Text Input while On-the-Go.” Mobile HCI, Toronto, Canada. September 2014. [45 of 211 submissions accepted.] [21%]
- D.2.84 C. Zeagler, S. Gilliland, L. Freil, T. Starner, and M. Jackson. “Going to the Dogs: Towards an Interactive Touchscreen Interface for Working Dog.” UIST, Honolulu, HI. October 2014. [22%]
- D.2.85 Z. Zafrulla, H. Sahni, A. Bedri, P. Thukral, and T. Starner. “Hand Detection in American Sign Language Depth Data Using Domain-Driven Random Forest Regression” In *IEEE International Workshop on Automatic Face and Gesture Recognition* Ljubljana, Slovenia, May 2015.
- D.2.86 T. Estes, D. Backus, and T. Starner. “A Wearable Vibration Glove for Improving Hand Sensation in Persons with Spinal Cord Injury Using Passive Haptic Rehabilitation.” International Conference on Pervasive Computing Technologies for Healthcare (PervasiveHealth). Istanbul, Turkey, May 2015. [30% of long papers accepted.] [30%]

- D.2.87 C. Seim, T. Estes, and T. Starner. “Towards Passive Haptic Learning of Piano Songs.” IEEE [43%]
World Haptics Conference. Evanston, IL, USA, June 2015. *[Full paper. 82 of 192 technical paper
submissions selected for presentation.]*
- D.2.88 J. Alcaininho, S. Tai, G. Valentin, B. Nguyen, K. Sanders, E. Gilbert, M. Jackson, and T.
Starner. “Leveraging Mobile Technology to Increase the Permanent Adoption of Shelter [25%]
Dogs.” ACM MobileHCI. Copenhagen, Denmark, August 2015. *[234 valid submissions; of these,
59 were accepted.]*
- D.2.89 X. Wu, M. Haynes, Y. Zhang, Z. Jiang, Z. Shen, A. Guo, T. Starner, S. Gilliland. “Comparing [25%]
Order Picking Assisted by Head-Up Display versus Pick-by-Light with Explicit Pick Confir-
mation.” ACM ISWC. Osaka, Japan, September 2015. *[31 of the 117 technical notes and long
papers accepted for oral presentation.]*
- D.2.90 A. Bedri, A. Verlekar, E. Thomaz, V. Avva, and T. Starner. “Detecting Mastication - A Wear- [41%]
able Approach.” ACM ICMI. Seattle, WA, November 2015. *[52 of the 127 submitted papers
accepted.]*
- D.2.91 C. Seim, S. Reynolds-Haertle, S. Srinivas, and T. Starner. “Tactile taps teach rhythmic text [19%]
entry: passive haptic learning of morse code.” ISWC. Heidelberg, Germany, September 2016.
[18 full papers accepted of 95 submitted.]
- D.2.92 A. Vujic, T. Starner, and M. Jackson. “MoodLens: towards improving nonverbal emotional [20%]
expression with an in-lens fiber optic display.” ISWC. Heidelberg, Germany, September 2016.
[25 short and full papers accepted of 124 submitted.]
- D.2.93 G. Valentin, J. Alcaininho, A. Howard, M. Jackson, and T. Starner. “Creating collar-sensed [19%]
motion gestures for dog-human communication in service applications.” ISWC. Heidelberg,
Germany, September 2016. *[18 full papers accepted of 95 submitted.]*
- D.2.94 X. Wu, M. Haynes, A. Guo, and T. Starner. “A comparison of order picking methods aug- [19%]
mented with weight checking error detection.” ISWC. Heidelberg, Germany, September 2016.
[18 full papers accepted of 95 submitted.]
- D.2.95 C. Zhang, J. Yang, C. Southern, T. Starner, and G. Abowd. “WatchOut: extending interactions [19%]
on a smartwatch with inertial sensing.” ISWC. Heidelberg, Germany, September 2016. *[18 full
papers accepted of 95 submitted.]*
- D.2.96 G. Reyes, D. Zhang, S. Ghosh, P. Shah, J. Wu, A. Parnami, B. Bercik, T. Starner, G. Abowd, [19%]
and K. Edwards. “Whoosh: Non-Voice Acoustics for Low-Cost, Hands-Free, and Rapid Input
on Smart Devices.” ISWC. Heidelberg, Germany, September 2016. *[18 full papers accepted of 95
submitted.]*
- D.2.97 M. Dhuliawala, J. Lee, J. Shimizu, A. Bulling, K. Kunze, T. Starner, W. Woo. “Smooth Eye [38%]
Movement Interaction Using EOG Glasses.” ACM ICMI. Tokyo, Japan, November 2016. *[55 of
the 144 submitted papers accepted.]*
- D.2.98 C. Zhang, A. Bedri, G. Reyes, B. Bercik, O. Inan, T. Starner, and G. Abowd. “TapSkin: Recog-
nizing On-Skin Input for Smartwatches.” ACM Interactive Surfaces and Spaces. pp. 13-22,
November 2016.
- D.2.99 C. Zhang, X. Wang, A. Waghmare, S. Jain, T. Ploetz, O. Inan, T. Starner, G. Abowd. “Fin- [28%]
gOrbits: Interaction with Wearables using Synchronized Thumb Movements.” ISWC. Maui,
Hawaii, September 2017. *[28% of long and tech-note papers accepted.]*
- D.2.100 J. Lee, H. Yeo, M. Dhuliawala, J. Akano, J. Shimizu, T. Starner, A. Quigley, W. Woo, K. Kunze. [28%]
“Itchy Nose: Discreet Gesture Interaction using EOG Sensors in Smart Eye-Wear.” ISWC.
Maui, Hawaii, September 2017. *[28% of long and tech-note papers accepted.]*

- D.2.101 C. Zhang, Q. Xue, A. Waghmare, R. Meng, S. Jain, Y. Han, X. Li, K. Cunefare, T. Ploetz, T. Starner, O. Inan, G. Abowd. “FingerPing: Recognizing fine-grained hand poses using active acoustic on-body sensing.” ACM CHI, 2018. [26% of all papers accepted (CHI no longer makes a distinction on length).] [26%]
- D.2.102 R. Li, V. Chen, G. Reyes, and T. Starner. “ScratchVR: Low-Cost, Calibration-Free Sensing for Tactile Input on Mobile Virtual Reality Enclosures.” ISWC. Singapore, October 2018. [Of 92 long and short papers submitted, <=38 accepted as at least short.] [~40%]
- D.2.103 J. Wu, C. Colglazier, A. Ravishankar, Y. Duan, Y. Wang, T. Ploetz, T. Starner. “SeeSaw - Rapid One-Handed Synchronous Gesture Interface for Smartwatches.” ISWC. Singapore, October 2018. [Of 92 long and short papers submitted, <=38 accepted as at least short.] [~40%]
- D.2.104 C. Thomas, T. Panagiotopoulos, P. Kotipalli, M. Haynes, and T. Starner. “RF-Pick: Comparing Order Picking Using a HUD with Wearable RFID Verification to Traditional Pick Methods.” ISWC. Singapore, October 2018. [Best Paper Award. 17 of 62 long submission accepted.] [27%]
- D.2.105 H. Li, S. Chawla, R. Li, S. Jain, G. Abowd, T. Starner, C. Zhang, T. Ploetz. “WristWash: Towards Automatic Handwashing Assessments Using a Wrist-worn Device.” ACM ISWC. Singapore, October 2018. [17 of 62 long submissions accepted] [27%]
- D.2.106 A. Olwal, J. Moeller, G. Priest-Dorman, T. Starner, B. Carroll. “I/O Braid: Scalable Touch-Sensitive Lighted Cords Using Spiraling, Repeating Sensing Textiles and Fiber Optics.” ACM UIST. Berlin, Germany. October 2018. [Best demo award.] []
- D.2.107 D. Joyner, C. Isbell, T. Starner, A. Goel. “Five Years of Graduate CS Education Online and at Scale.” ACM Global Computing Education Conference (CompEd). Chengdu, China. May 2019. [33%]

D.3. Conference Presentations with Proceedings (refereed)

[Short or long papers in international conferences plus archival posters.]

- D.3.1 Pentland, A., M. Friedman, B. Horowitz, S. Sclaroff, and T. Starner. “The ThingWorld Modeling System,” In *Proceedings of International Workshop on Algorithms and Parallel VLSI Architectures*, pp. 168–172, Pont-a-Mousson, France, June 1990.
- D.3.2 Pentland, A., T. Starner, N. Etcoff, A. Masoiu, O. Oliyide, and M. Turk. “Experiments with Eigenfaces.” In *Proceedings of the Looking At People Workshop, IJCAI’93*, pp. 1-6, Chamberry, France, August 1993.
- D.3.3 A. Pentland, S. Sclaroff, T. Darrell, I. Essa, A. Azarbayejani, and T. Starner. “Visually guided interaction and animation.” Conference Record of the Twenty-Eighth Asilomar Conference on Signals, Systems and Computers, Volume 2, pp. 1287–1291, 1994
- D.3.4 Wren, C., T. Darrell, T. Starner, M. Johnston, K. Russell, A. Azarbayejani, and A. Pentland. “Pfinder: A Real-Time System for Tracking People.” In *SPIE Conference on Real-Time Vision*, M. Bove (editor), Philadelphia, PA, July 1995.
- D.3.5 Russell, K., T. Starner, and A. Pentland. “Unencumbered Virtual Environments.” In *IJCAI Workshop on Entertainment and AI/Alife*, Montreal, Quebec, August 1995.
- D.3.6 Wren C., A. Azarbayejani, T. Darrell, M. Johnson, K. Russell, T. Starner, and A. Pentland. “Hierarchical Classification for Human Body Tracking.” In *Proc. SPIE Integration Issues in Large Commercial Media Delivery Systems*, 2615, pp. 99-106, October, 1995.

- D.3.7 A. Pentland, A. Pentland, M. Petrazzuoli, A. Gerega, and T. Starner. “The Digital Doctor: An Experiment in Wearable Telemedicine.” *IEEE International Symposium on Wearable Computers*, Cambridge, MA, October 1997, pp. 173-174. [Archival poster] [31%]
- D.3.8 T. Starner, D. Kirsh, and S. Assefa. “The Locust Swarm: An Environmentally-powered, Networkless Location and Messaging System.” *IEEE International Symposium on Wearable Computers*, Cambridge, MA, October 1997, pp. 169-170. [Archival poster] [31%]
- D.3.9 Kidd. C., G. Abowd, C. Atkeson, I. Essa, B. MacIntyre, E. Mynatt, T. Starner, “The Aware Home: A Living Laboratory for Ubiquitous Computing Research”, In *Proceedings of Second International Workshop on Cooperative Buildings 1999*, Editors, Streitzi, J. Siegel, V. Hartkopf, S. Konomi, Pittsburgh. LNCS 1670. Springer: Heidelberg, 1999.
- D.3.10 K. Lyons, M. Gandy, and T. Starner. “Guided by Voices: An Audio Augmented Reality System.” Intl. Conf. on Auditory Display (ICAD), Atlanta, GA, April 2000, pp. 57-62.
- D.3.11 G. Abowd, C. Atkeson, A. Bobick, I. Essa, B. MacIntyre, E. Mynatt, and T. Starner, “Living Laboratories: The Future Computing Environments Group at the Georgia Institute of Technology,” In *ACM Extended Abstracts of the 2000 Conference on Human Factors in Computing Systems (CHI 2000)*, The Hague, Netherlands, April 1-6, 2000, pp. 215-216.
- D.3.12 K. Lyons, L. Harvel, and T. Starner. “A Context-based Document System for Wearable Computers.” *IEEE International Symposium on Wearable Computers*, Atlanta, GA, October 2000, pp. 187-188. [Archival poster]
- D.3.13 B. Singletary and T. Starner. “Learning Visual Models of Social Engagement.” Intl. Work. on Recognition, Analysis, and Tracking of Faces and Gestures in Realtime Systems, Vancouver, Canada, July 2001, pp. 141-148.
- D.3.14 B. Singletary and T. Starner. (extended abstract reviewed) “Symbiotic interfaces for wearable face recognition.” Human Computer Interaction International (HCII), New Orleans, LA, August 2001, pp. 813-817.
- D.3.15 B. Wong and T. Starner. (extended abstract reviewed) “Conversational Speech Recognition for Creating Intelligent Agents on Wearables.” Human Computer Interaction International (HCII), New Orleans, LA, August 2001, pp. 823-827.
- D.3.16 D. Ashbrook, J. Auxier, M. Gandy, and T. Starner. (extended abstract reviewed) “Experiments in Interaction Between Wearable and Environmental Infrastructure Using the Gesture Pendant.” Human Computer Interaction International (HCII), New Orleans, LA, August 2001, pp. 818-822.
- D.3.17 D. Krum, O. Omoteso, W. Ribarsky, T. Starner, and L. Hodges. “Speech and Gesture Multimodal Control of a Whole Earth 3D Visualization Environment.” *IEEE VisSym*, pp. 195-200, Barcelona, Spain, May 2002, [31 of 80 submissions accepted.] [39%]
- D.3.18 K. Lyons, N. Patel, and T. Starner. “KeyMenu: A Keyboard Based Hierarchical Menu.” *IEEE International Symposium on Wearable Computers*, White Plains, NY, October 2003, pp. 240-241. [Poster: Approximately 50% of posters were accepted.] [50%]
- D.3.19 R. McGuire, J. Hernandez-Rebollar, T. Starner, V. Henderson, H. Brashear, and D. Ross. “Towards a One-Way American Sign Language Translator”, In *IEEE Intl. Conference on Automatic Face and Gesture Recognition*, Seoul, South Korea, May 2004. pp. 620–625. [Poster: Approximately 50% of posters were accepted.] [50%]

- D.3.20 T. Westeyn and T. Starner. “Recognizing Song–Based Blink Patterns: Applications for Restricted and Universal Access”, In *IEEE Intl. Conference on Automatic Face and Gesture Recognition*, Seoul, South Korea, May 2004. pp. 717–722. [Poster: Approximately 50% of posters were accepted.] [50%]
- D.3.21 T. Starner and D. Ashbrook, ”Augmenting a pH Medical Study with Wearable Video for Treatment of GERD.” *IEEE International Symposium on Wearable Computers*, Washington, DC, October 2004. pp. 194–195. [Poster: 29% acceptance overall.]
- D.3.22 S. Lee, V. Henderson, H. Hamilton, T. Starner, H. Brashear, S. Hamilton. “A Gesture-Based American Sign Language Game for Deaf Children.” CHI, Portland, Oregon, April 2005. pp. 1589–1592. [Interactive Poster: 16% of short paper submissions accepted as interactive posters; 25% short papers accepted.] [41%]
- D.3.23 K. Lyons, B. Gane, T. Starner, and R. Catrambone. “Improving Novice Performance on the Twiddler One-Handed Chording Keyboard.” Intl. Forum on Applied Wearable Computing, Zurich, Switzerland. March 2005. pp. 145–159.
- D.3.24 V. Henderson, S. Lee, H. Brashear, H. Hamilton, T. Starner, and S. Hamilton. “Development of an American Sign Language Game for Deaf Children.” Interaction Design and Children (IDC), Boulder, CO, June 2005.
- D.3.25 S. Lee, V. Henderson, H. Brashear, T. Starner, S. Hamilton, and H. Hamilton. “User-centered Development of a Gesture-based American Sign Language Game.” NTID Instructional Technology and Education of the Deaf Symposium, Rochester, NY, June 2005. pp. MDC-1–MDC-8.
- D.3.26 T. Westeyn, P. Pesti, K. Park, and T. Starner. (invited paper) “Biometric Identification using Song-Based Eye Blink Patterns.” Human Computer Interaction International (HCII), Las Vegas, NV, July 2005.
- D.3.27 K. Lyons and T. Starner. “Augmenting Cognition with Wearable Computers” Human Computer Interaction International (HCII), Las Vegas, NV, July 2005. (due to publisher, no page numbers available). [Poster: Acceptance rate was under 50%.] [50%]
- D.3.28 D. Ashbrook, T. Westeyn, and T. Starner. “Dancing in the Streets: Smartphones and Gaming.” Electronic proceedings of Workshop on Ubiquitous Entertainment and Games at the UbiComp conference. Tokyo, Japan. September 2005.
- D.3.29 M. Doo, K. Lyons, and T. Starner. “The Korean Twiddler: One-handed Chording Text Entry for Korean Mobile Phones.” CHI Extended Abstracts, Montreal, Canada, April 2006, pp. 718–723. [Works-in-progress poster.]
- D.3.30 D. Minnen, T. Westeyn, T. Starner, J. Ward, and P. Lukowicz. “Performance Metrics and Evaluation Issues for Continuous Activity Recognition.” Performance Metrics for Intelligent Systems Workshop (PERMIS), pp. 141–148, Gaithersburg, MD, August 2006.
- D.3.31 T. Westeyn, P. Presti, and T. Starner. “ActionGSR: A Combination Galvanic Skin Response-Accelerometer for Physiological Measurements in Active Environments.” In *IEEE International Symposium on Wearable Computers*, Montreux, Switzerland, October 2006. [Poster]
- D.3.32 K. Lyons, H. Brashear, T. Westeyn, J. S. Kim, and T. Starner. “GART: The Gesture and Activity Recognition Toolkit.” 12th International Conference on Human–Computer Interaction (HCII), Beijing, China. July, 2007. [Extended abstract reviewed.]
- D.3.33 T. Westeyn, J. Kientz, T. Starner, and G. Abowd. “Designing toys with automatic play characterization for supporting the assessment of a child’s development.” In *Proceedings of the 7th ACM International Conference on Interaction Design and Children (IDC)*, pp. 89–92, New York, NY, 2008.

- D.3.34 Z. Zafrulla, J. Etherton, and T. Starner. “TTY phone: direct, equal emergency access for the deaf.” In Proceedings of the 10th international ACM SIGACCESS conference on computers and accessibility (ASSETS), pp. 277–278, New York, NY, 2008. *[Poster.]*
- D.3.35 V. Henderson-Summet, K. Weaver, T. Westeyn, and T. Starner. “American sign language vocabulary: computer aided instruction for non-signers.” In Proceedings of the 10th international ACM SIGACCESS conference on computers and accessibility (ASSETS), pp. 281–282, New York, NY, 2008. *[Poster.]*
- D.3.36 S. Cuzzort and T. Starner. “AstroWheelie: A wheelchair based exercise game.” In Proceedings of the 12th IEEE International Symposium on Wearable Computers (ISWC), pp. 113–114, Washington, DC, October 2008. *[Archival poster. 24 acceptances out of 60 submissions overall]* [40%]
- D.3.37 S. Lee and T. Starner. “Stop burdening your eyes: a wearable electro-tactile display.” In Proceedings of the 12th IEEE International Symposium on Wearable Computers (ISWC), pp. 115–116, Washington, DC, October 2008. *[Archival poster. 24 acceptances out of 60 submissions overall]* [40%]
- D.3.38 J. Clawson, N. Patel, and T. Starner. “Exploring Computer Augmented Communication through an Examination of the Collocated Use of Multiple Mobile Displays.” In Proceedings of the Beyond the Laboratory: Supporting Authentic Collaboration with Multiple Displays workshop at CSCW, San Diego, CA, November 2008.
- D.3.39 S. Lee and T. Starner. “Mobile Gesture Interaction Using Wearable Tactile Displays.” In Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI) Extended Abstracts, pp. 3437–3442, Boston, MA, April 2009.
- D.3.40 T. Westeyn, T. Starner, G. Abowd, R. Arriaga and P. Presti. “An Initial Investigation Using Augmented Toys and Statistical Models to Automatically Categorize Object Play Behaviors.” Eight Annual International Meeting For Autism Research (IMFAR). Chicago, IL, May 2009.
- D.3.41 T. Westeyn, P. Presti, J. Johnson, and T. Starner. “A Naive Technique for Correcting Time-Series Data for Recognition Applications.” IEEE ISWC, Linz, Austria. September 2009. *[Archival poster.]*
- D.3.42 H. Iben, H. Baumann, T. Starner, C. Ruthenbeck, and T. Klug. “Visual based picking supported by context awareness: Comparing picking performance using paper-based lists versus lists presented on a headmounted display with contextual support.” ACM ICMI-MLMI, Cambridge, MA, USA, November 2009.
- D.3.43 T. Starner, N. Patel, Z. Zafrulla, K. Deo, E. Price, and H. Hamilton. “TTYPhone: 911 Emergency Access for the Deaf.” Wireless RERC State of Technology conference, Atlanta, GA, September 2009.
- D.3.44 T. Westeyn, P. Presti, S. Gilliland, J. He, D. Quigley, J. Johnson, T. Starner “Capacitance Sensing in Smart Toys: Aiding the Detection of Play Behaviors.” Ubicomp poster, Orlando, FL, October 2009.
- D.3.45 T. Markow, N. Ramakrishnan, K. Huang, T. Starner, M. Eicholtz, S. Garrett, H. Profita, A. Scarlata, C. Schooler, and A. Tarun. “Mobile Music Touch: Vibration stimulus in hand rehabilitation.” IEEE Pervasive Computing Technologies for Healthcare (PervasiveHealth), pp. 1-8, 2010.
- D.3.46 J. Deen, S. Lee, B. Li, T. Starner. “Improving the form factor of a wrist-based mobile gesture interface.” ACM CHI extended proceedings, pp. 3679-3684, 2010.

- D.3.47 K. Weaver, H. Hamilton, Z. Zafrulla, H. Brashear, T. Starner, P. Presti, and A. Bruckman. “Improving the language ability of deaf signing children through an interactive American sign language-based video game.” ICLS vol. 2, pp. 306-307, 2010. *[Poster.]*
- D.3.48 H. Brashear, Z. Zafrulla, T. Starner, H. Hamilton, P. Presti, and S. Lee. “A Corpus for Verifying American Sign Language During Game Play by Deaf Children.” Fourth Workshop on the Representation and Processing of Sign Languages: Corpora and Sign Language Technologies, May 2010.
- D.3.49 S. Lee, T. Starner, and H. Shin. “The Effect of Body Configuration and Heuristics in On-body Information Tactilization of Directional Patterns.” In proceedings of HaptiMap: Using Audio and Haptics for Delivering Spatial Information via Mobile devices Workshop in conjunction with ACM MobileHCI, Lisbon, Portugal, September 2010.
- D.3.50 J. Clawson, N. Patel, and T. Starner “Digital Kick in the Shin: On-body communication tools for couples trapped in face-to-face group conversations.” In proceedings of the Workshop on Ensembles of On-Body Devices in conjunction with MobileHCI, Lisbon, Portugal, September 2010.
- D.3.51 K. Weaver and T. Starner. “Mobile Sign Language Learning Outside the Classroom.” CHI workshop on Educational Interfaces Software and Technology, 2012.
- D.3.52 K. Weaver and T. Starner. “SMARTSign: A Different Flavor of Accessibility.” Pervasive Computing workshop on Frontiers in Accessibility for Pervasive Computing, 2012
- D.3.53 H. Baumann, T. Starner, and P. Zschaler. “Studying Order Picking in an Operating Automobile Manufacturing Plant.” IEEE ISWC, Newcastle, UK, June 2012. *[Archival poster. Overall acceptance rate of all archival submissions was 39%.]* **[39%]**
- D.3.54 C. Zeagler, S. Audy, S. Pobiner, H. Profita, S. Gilliland, T. Starner. “The electronic textile interface workshop: Facilitating interdisciplinary collaboration.” ISTAS, Toronto, Canada, pp. 76–85, June 2013.
- D.3.55 C. Zeagler, S. Gilliland, S. Audy, T. Starner. “Can I Wash It?: The Effect of Washing Conductive Materials Used in Making Textile Based Wearable Electronic Interfaces.” IEEE ISWC, Zurich, Switzerland, September 2013. *[Archival poster.]* **[31%]**
- D.3.56 D. Kohlsdorf, S. Gilliland, P. Presti, T. Starner, D. Herzing. “An Underwater Wearable Computer for Two Way Human-Dolphin Communication Experimentation.” IEEE ISWC, Zurich, Switzerland, September 2013. *[Archival poster.]* **[31%]**
- D.3.57 D. Kohlsdorf, T. Starner, C. Mason, D. Herzing. “Probabilistic Extraction and Discovery of Fundamental Units in Dolphin Whistles.” ICASSP, Florence, Italy, May 2014.
- D.3.58 C. Seim, D. Quigley, T. Starner. “Passive haptic learning of typing skills facilitated by wearable computers.” CHI Work In Progress, 2014. *[Archival six page poster.]* **[~45%]**
- D.3.59 G. Valentin, J. Alcaininho, L. Freil, C. Zeagler, M. Jackson, and T. Starner “Canine Reachability of Snout-based Wearable Inputs.” ACM ISWC, Seattle, WA, September 2014. *[Archival poster.]* **[33%]**
- D.3.60 C. Seim and T. Starner “Can we overcome the learning curve for sophisticated text entry systems?” CHI Workshop on Text Entry on the Edge. Seoul, Korea, April 2015. *[Peer-reviewed position paper.]*
- D.3.61 A. Bedri, A. Verlekar, E. Thomaz, V. Avva, and T. Starner. “A Wearable System for Detecting Eating Activities with Outer Ear Proximity Sensing.” ACM ISWC. Osaka, Japan, September 2015. *[Archival brief. 39 of the 121 total submissions accepted.]* **[32%]**

- D.3.62 G. Valentin, J. Alcaininho, M. Jackson, A. Howard, and T. Starner. “Towards a canine-human communication system based on head gestures.” Animal-Computer Interaction Congress at the 12th International Conference on Advances in Computing Entertainment. ACM, November, 2015.
- D.3.63 N. Arora, I. Walker, L. Freil, J. Thompson, T. Starner, and M. Jackson “Towards Mobile and Wearable Brain-Computer Interfaces.” International Brain Computer Interface Meeting. Asilomar, CA USA, May, 2016
- D.3.64 C. Zeagler, J. Zuerndorfer, A. Lau, L. Freil, S. Gilliland, T. Starner, and M. Jackson. “Canine Computer Interaction: Towards Designing a Touchscreen Interface for Working Dogs.” Animal-Computer Interaction. Milton Keynes, UK, November, 2016.
- D.3.65 C. Zeagler, C. Byrne, G. Valentin, L. Freil, E. Kidder, J. Crouch, T. Starner, and M. Jackson. “Search and Rescue: Dog and Handler Collaboration Through Wearable and Mobile Interfaces.” Animal-Computer Interaction. Milton Keynes, UK, November, 2016.
- D.3.66 M. Haynes and T. Starner. “Effects of Head Worn Display Position on Visual Comfort While Reading.” ISWC. Maui, Hawaii, September 2017. *[Archival poster. 31 of 90 submissions accepted.]* [34%]
- D.3.67 J. Lee, H. Yeo, T. Starner, A. Quigley, K. Kunze, W. Woo. “Automated Data Gathering and Training Tool for Personalized ‘Itchy Nose’.” ACM Augmented Human, Seoul, Korea, 2018. pp. 43:1-43:3.
- D.3.68 C. Ramey, S. Gilliland, D. Kohlsdorf, and T. Starner. “Wear-a-CUDA: A GPU Based Dolphin Whistle Recognizer for Underwater Wearable Computers.” ISWC. Singapore, October 2018.
- D.3.69 C. Seim, R. Pontes, S. Kadiveti, Z. Adamjee, A. Cochran, T. Aveni, P. Presti, T. Starner. “Towards Haptic Learning on a Smartwatch.” ISWC. Singapore, October 2018.

D.4. Conference Presentations with Proceedings (non-refereed)

- D.4.1 T. Starner, B. Leibe, B. Singletary, K. Lyons, M. Gandy, and J. Pair. (invited paper) “Towards Augmented Reality Gaming.” Proc. of IMAGINA, Monte Carlo, January 2000.
- D.4.2 T. Starner. (invited paper) “Wearable Computers as Intelligent Agents.” Proc. of Interaction, Tokyo, Japan, March 2002,
- D.4.3 T. Starner. (invited paper) “Ubiquitous Mobile Interfaces.” NIDRR Wireless RERC State of the Technology Conference. Atlanta, GA. April 2004.
- D.4.4 T. Starner. (invited paper) “Reading Your Mind: Interfaces for Wearable Computing.” International Symposium on Ubiquitous Virtual Reality (ISUVR), Gwangju, South Korea, July 2008.
- D.4.5 S. Gilliland and T. Starner. “Development of a Custom Keyboard for Extended Use in Salt Water.” ISWC Wear and Tear Workshop, Osaka, Japan, September 2015.
- D.4.6 A. Bedri, H. Sahni, D. Byrd, Z. Gue, P. Presti, and T. Starner. “Stick It In Your Ear: Building an In-Ear Jaw Movement Sensor.” ISWC Wear and Tear Workshop, Osaka, Japan, September 2015.

D.5. Conference Presentations without Proceedings (abstract refereed)

- D.5.1 Pentland, A., I. Essa, M. Friedmann, B. Horowitz, S. Sclaroff, and T. Starner. “ThingWorld” Live Demonstration of the system at *ACM Computer Graphics, Second Interactive 3D Graphics Symposium*, Snowbird, UT., March 1990.
- D.5.2 Friedmann, M., I. Essa, B. Horowitz, S. Sclaroff, T. Starner, and A. Pentland. “Distributed ThingWorld” Live Demonstration of the system at *G-Tech, ACM SIGGRAPH Conference, '92*, Chicago, IL., August 1992.
- D.5.3 B. Blumberg, T. Darrell, T. Starner, K. Russell, M. Hlavac, M. Johnson, P. Maes, and A. Pentland. “ALIVE.” Live demonstration of room-sized, computer vision based augmented reality. AAAI Art Show, October 1994.
- D.5.4 T. Starner. “Environmental and Wearable Approaches to Ubiquitous Computing.” Boeing Workshop on Wearable Computer Systems. Renton, WA, August 1996.
- D.5.5 T. Starner and A. Pentland. “Computer-based Visual Recognition of American Sign Language.” Plenary speaker, *Theoretical Issues in Sign Language Research*. Montreal, Canada, September 1996.
- D.5.6 T. Starner and A. Pentland. “Image Understanding on Wearable Computers.” DARPA Workshop on Image Understanding. Invited poster. New Orleans, LA, November 1997.
- D.5.7 D. Ashbrook and T. Starner, “Enabling Ad-Hoc Collaboration Through Schedule Learning and Prediction.” *Mobile Ad Hoc Collaboration Workshop (at CHI)*, Minneapolis, MN, April 2002.
- D.5.8 C. Snoeck and T. Starner, “Calendar Navigator Agent and Dialog Tabs” Live demonstration at *User Interface and Software Technology (UIST)*, Vancouver, BC, November 2003.
- D.5.9 D. Ashbrook and T. Starner, “Activity analysis, recognition, and discovery.” *CHI Workshop on Forecasting Presence and Availability*. Vienna, Austria. April 2004.
- D.5.10 D. Minnen, T. Starner, I. Essa, and C. Isbell, “Activity Discovery: Sparse Motifs from Multivariate Time Series.” In *Snowbird Machine Learning Workshop 2006*.
- D.5.11 D. Minnen, T. Starner, I. Essa, and C. Isbell, “Pattern Discovery for Locating Motifs in Multivariate, Real-valued Time-series Data.” In *Snowbird Machine Learning Workshop 2007*.
- D.5.12 A. Vujic, T. Starner, M. Jackson, “Wearable, Visual Emotional Expression Glasses for ALS-specified AAC.” *Proceedings of the 32nd Annual CSUN Assistive Technology Conference 2017*.
- D.5.13 A. Olwal, J. Moeller, G. Priest-Dorman, T. Starner, B. Carroll. “I/O Braid: Scalable Touch-Sensitive Lighted Cords Using Spiraling, Repeating Sensing Textiles and Fiber Optics.” **Best demonstration award at ACM UIST**. Berlin, Germany. October 2018.
- D.5.14 N. Arora, T. Starner, G. Abowd. “ZEUSSS: Zero Energy Ubiquitous Sound Sensing Surface Leveraging Triboelectric Nanogenerator and Analog Backscatter Communication” **Best poster award at ACM UIST**. Berlin, Germany. October 2018.
- D.5.15 C. Seim, T. Estes, T. Starner. “Wearable rehab on-the-go?: Passive tactile stimulation for upper extremity rehabilitation post-stroke.” Program No. 055: *Stroke Imaging and Diagnostic Studies*. Society for Neuroscience. **1% selected for interactive poster presentation**. San Diego, CA 2018.

D.6. Conference tutorials

- D.6.1 T. Starner. "Privacy." Tutorial (3 hours) at *IEEE International Symposium on Wearable Computers* Zurich, Switzerland, October 2001. 25 attendees.
- D.6.2 T. Starner and B. Rhodes. "Introduction to Wearable Computers" Tutorial (3 hours) at *Pervasive Computing*, Zurich, Switzerland, August 2002. 30 attendees.
- D.6.3 T. Starner. "Wearable Computers as Intelligent Agents," Tutorial (3 hours) at *Summer School on Ubiquitous and Pervasive Computing*, Schloss Dagstuhl, Germany, August 2002. 60 attendees.
- D.6.4 T. Starner. "Power and Heat in Ubiquitous Computing," Tutorial (1.5 hours) at *Summer School on Ubiquitous and Pervasive Computing*, Schloss Dagstuhl, Germany, August 2002. 60 attendees.
- D.6.5 T. Starner and B. Rhodes. "Introduction to Wearable Computers" Tutorial (3 hours) at *ISWC*, Seattle, WA, October 2002. 30 attendees.
- D.6.6 T. Starner and B. Rhodes. "Introduction to Wearable Computers" Tutorial (3 hours) at *Mobisys*, San Francisco, CA, May 2003.
- D.6.7 T. Starner and B. Rhodes. "Introduction to Wearable Computers" Tutorial (3 hours) at *ISWC*. White Plains, NY, October 2003. 25 attendees
- D.6.8 T. Starner and K. Lyons. "Mobile and Wearable Interfaces" Tutorial (2.5 hours) at *ISWC*. Arlington, VA October 2004. 33 attendees
- D.6.9 T. Starner. "Mobile and Wearable Human Computer Interaction" Tutorial (2.5 hours) at *International Conference on Artificial Reality and Telepresence*. Seoul, South Korea. November 2004. 60 attendees.
- D.6.10 T. Starner. "Pervasive Computing." Tutorial (16 hours) at *Samsung*. Suwon, South Korea. May 2007. 30 attendees.
- D.6.11 T. Starner. "Alternative I/O on Mobile Devices." Tutorial (16 hours) at *Samsung*. Suwon, South Korea. May 2007. 30 attendees.
- D.6.12 T. Starner. "Ubiquitous Computing." Tutorial (16 hours) at *Samsung*. Suwon, South Korea. May 2008. 30 attendees.
- D.6.13 T. Starner. "Alternative I/O on Mobile Devices." Tutorial (16 hours) at *Samsung*. Suwon, South Korea. May 2008. 18 attendees.
- D.6.14 T. Starner, Clint Zeagler, and Scott Pobiner. "The E-Textile Interface Swatchbook Workshop." Design workshop/tutorial (8 hours) at *Parsons School of Design*. New York City, NY. October 2011. 20 participants.
- D.6.15 T. Starner, Clint Zeagler, and Scott Pobiner. "The E-Textile Interface Swatchbook Workshop." Design workshop/tutorial (8 hours) at *Savannah College of Art and Design*. Atlanta, GA. April 2012. 20 participants.
- D.6.16 T. Starner, Clint Zeagler, and Scott Pobiner. "The E-Textile Interface Swatchbook Workshop." Design workshop/tutorial (8 hours) at *Georgia Institute of Technology, Industrial Design*. Atlanta, GA. April 2012. 15 participants.
- D.6.17 T. Starner, Clint Zeagler, and Scott Pobiner. "The E-Textile Interface Swatchbook Workshop." Design workshop/tutorial (8 hours) at *Smart Textiles*. Miami, FL. April 2012. 30 participants.

- D.6.18 Clint Zeagler and T. Starner. “The E-Textile Interface Swatchbook Workshop.” Design workshop/tutorial (8 hours) at GVU 20th Anniversary. Atlanta, GA. October 2012. 8 participants.
- D.6.19 T. Starner. “Designing Wearable Computers.” Future User Interfaces. Les Diablerets, Switzerland. January 2015. 40 participants.
- D.6.20 T. Starner. “Creating Gestural Interfaces.” Future User Interfaces. Les Diablerets, Switzerland. January 2015. 40 participants.

D.7. Popular Press Essays

- D.7.1 T. Starner. “Google Glass Lead: How Wearing Tech on Our Bodies Actually Helps It Get Out of Our Way.” Wired blog affiliated with the January 2013 issue on Wearable Computers. December 2013.
- D.7.2 T. Starner. “A Computer Scientist’s Unexpected Run–In With... a Shark.” Huffington Post commentary on Denise Herzing’s TED Talk describing creating the equipment she uses for her work on two-way communication with dolphins. December 2013.
- D.7.3 T. Starner “Giving Dogs a Voice.” Engadget blog in cooperation with the IEEE Standards Association. January 2017.

D.8. Software and Hardware

- D.8.1 M. Friedmann, I. Essa, B. Horowitz, S. Sclaroff, T. Starner, and A. Pentland. “The ThingWorld System.” A three dimensional solid modeling and sculpting system developed at the MIT Media Laboratory. Used in over 25 research institutions. 1988-1992.
- D.8.2 M. Turk, T. Starner, A. Pentland, “Eigenfaces.”
<ftp://whitechapel.media.mit.edu/pub/face-recognition.tar.Z>
Face recognition software. 1991.
- D.8.3 J. Levine and T. Starner, “Twiddler driver.” Drivers for Handykey’s one-handed chording keyboard under Linux. 1996.
- D.8.4 B. Walter and T. Starner, “X11R6 for Private Eye display.” Port of popular windowing system to a head-up display. 1996.
- D.8.5 B. Wenzel and T. Starner, “Sierra-state and sierra-mod.” Linux utilities to perform diagnosis, set states, and use the Sierra Wireless PoquetPlus 210 cellular digital packet data (CDPD) modem. 1996.
- D.8.6 D. Kirsch, S. Assefa, and T. Starner, “Locust: An Experiment in Private Localization.” Hardware and software for implementing a beacon-based infrared location system that preserves privacy. 1997.
- D.8.7 W. Rachelson, P. Presti, and T. Starner, Bluetooth accelerometer. 2001-2005.
- D.8.8 T. Westeyn, H. Brashear, A. Atrash, and T. Starner. “Georgia Tech Gesture Toolkit (GT2K).” A toolkit for creating gesture interfaces. 2003.
- D.8.9 K. Lyons, J. Fusia, D. Plaisted, and T. Starner, “Twidor.” Tutor software for the Twiddler keyboard based on our experiments. 2005.
- D.8.10 K. Lyons, H. Brashear, T. Westeyn, J. Kim and T. Starner. “Gesture and Activity Recognition Toolkit (GART).” A HCI toolkit for creating gesture interfaces. 2007.

D.9. Published Papers (non-refereed)

- D.9.1 M. Billinghamurst and T. Starner. "Wearable Devices: New Ways to Manage Information." *IEEE Computer*, 32(1), January 1999, pp. 57-64.
- D.9.2 T. Starner, B. Leibe, B. Singletary, K. Lyons, M. Gandy, and J. Pair. (informal review) "Exploring Mobile and Desk-based Gaming Appliances." Sidebar in "Survey on Information Appliances." *IEEE Computer Graphics and Applications (CGA)*, 20(3), May 2000, p. 22.
- D.9.3 T. Starner. "The Challenges of Wearable Computing: Part 1." *IEEE Micro*, 21(4), July 2001, pp. 44-52.
- D.9.4 T. Starner. "The Challenges of Wearable Computing: Part 2." *IEEE Micro*, 21(4), July 2001, pp. 54-67. (These articles were written to be part of a special issue on wearable computing but then split due to the length so as to be printed over two issues. However, an unexpected retraction in the second issue caused both parts to be printed in the same issue.)
- D.9.5 T. Starner. "Thick Clients for Personal Wireless Devices." *IEEE Computer*, 35(1), January 2002, pp. 133-135.
- D.9.6 T. Starner. "Wearable Computers: No Longer Science Fiction." *IEEE Pervasive Computing*, 1(1), January 2002, pp. 86-88.
- D.9.7 T. Starner. "Wearable Agents." *IEEE Pervasive Computing*, 1(2), April 2002, pp. 90-92.
- D.9.8 T. Starner. "The Role of Speech Input in Wearable Computing." *IEEE Pervasive Computing*, 1(3), July 2002, pp. 89-93.
- D.9.9 T. Starner. "Attention, Memory, and Wearable Interfaces." *IEEE Pervasive Computing*, 1(4), October 2002, pp. 88-91.
- D.9.10 T. Starner. "The Enigmatic Display." *IEEE Pervasive Computing*, 2(1), January 2003, pp. 133-135.
- D.9.11 M. Gandy, D. Ross, and T. Starner. "Universal Access and Wearable Aids." *IEEE Pervasive Computing*. 2(3), September 2003, pp. 19-23.
- D.9.12 T. Starner. "Powerful Change Part 1: Batteries and Possible Alternatives for the Mobile Market." *IEEE Pervasive Computing*. 2(4), December 2003, pp.86-88.
- D.9.13 T. Starner. "Keyboards Redux: Enabling mobile e-mail and other services with fast mobile text entry." *IEEE Pervasive Computing*. 3(3), September 2004.
- D.9.14 D. Dagon, T. Martin, and T. Starner. "Mobile Phones as Computing Devices: The Viruses are Coming!" *IEEE Pervasive Computing*. 3(4), December 2004.
- D.9.15 T. Starner, K. Lyons, and R. Grinter. "Missing the Wave? Scattershot Funding has its Costs." *IEEE Pervasive Computing*. 4(1), January 2005.
- D.9.16 T. Starner. "Design Factors for Wearable and Environmental Applications." (sidebar) *IEEE Pervasive Computing*. 4(2), September 2005, p. 15.
- D.9.17 T. Starner. "Wearable Computing for the Developing World" *IEEE Pervasive Computing*. 4(3), September 2005.
- D.9.18 T. Starner. "A Wearable User's Dashboard and Turn Signals" *IEEE Pervasive Computing*. 6(2), September 2007.

- D.9.19 T. Starner. "Project Glass: An Extension of the Self" *IEEE Pervasive Computing*. 12(2), April 2013.
- D.9.20 C. Byrne, R. Kerwin, J. Zuerndorfer, S. Gilliland, Z. Guo, M. Jackson, and T. Starner. "Two-Way Communication between Working Dogs and Their Handlers" *IEEE Pervasive Computing*. 13(2), April 2014.
- D.9.21 T. Starner. "How Wearables Worked their Way into the Mainstream" *IEEE Pervasive Computing*. 13(4), October 2014.
- D.9.22 T. Starner and T. Martin. "Wearable Computing: The New Dress Code" Guest editors' introduction to wearable computing special issue of *IEEE Computer*. 48 (6), June 2015, pp. 23–25.

D.10. Technical Reports (not submitted elsewhere)

- D.10.1 T. Starner. "The Cyborgs Are Coming." MIT Media Laboratory Perceptual Computing Technical Report #318. July 1995. (First document from the MIT Wearable Computing Project. Original written for Wired magazine November 1993 - unpublished.)
- D.10.2 K. Lyons, C. Kidd, and T. Starner. "Widespread Easy and Subtle Tracking with Wireless Identification Networkless Devices – WEST WIND: an Environmental Tracking System." GIT-GVU-00-15, GVU Center, College of Computing, Georgia Institute of Technology 2000.
- D.10.3 C. Kidd, T. Starner, M. Gandy, A. Quay. "The Beware Home: A Contextually Aware Haunted House." GIT-GVU-00-29, GVU Center, College of Computing, Georgia Institute of Technology 2000.
- D.10.4 B. Wong, T. Starner, and R. McGuire. "Towards Conversational Speech Recognition for a Wearable Computer Based Appointment Scheduling Agent." GIT-GVU-02-17, GVU Center, College of Computing, Georgia Institute of Technology, 2002.
- D.10.5 D. Hilley, A. El-Helw, M. Wolenetz, I. Essa, P. Hutto, T. Starner, and U. Ramachandran. "TV Watcher: Distributed Media Analysis and Correlation." GIT-CERCS-04-25, Center for Experimental Research in Computer Systems, Georgia Institute of Technology, July 2004.
- D.10.6 V. Henderson, R. Grinter, and T. Starner. "Electronic Communication by Deaf Teenagers." GIT-GVU-05-34, GVU Center, College of Computing, Georgia Institute of Technology, October 2005.
- D.10.7 K. Vadas, K. Lyons, D. Ashbrook, J. S. Yi, T. Starner, and J. Jacko. "Reading on the Go: An Evaluation of Three Mobile Display Technologies." GIT-GVU-06-09, GVU Center, College of Computing, Georgia Institute of Technology, 2006.
- D.10.8 J. DeBlasio, B. Caldwell, L. Mauney, K. Lyons, E. Kintz, B. Walker, J. Jacko, and T. Starner. "The Use of Different Technologies During a Medical Interview: Effects on Perceived Quality of Care." GIT-GVU-07-13, GVU Center, College of Computing, Georgia Institute of Technology, 2007. (shorter version in *Human Factors* 2009)
- D.10.9 C. Zeagler, S. Gilliland, S. Audy, T. Starner "Can I Wash It? : The Effect of Washing Conductive Materials Used in Making Textile Based Wearable Electronic Interfaces." GIT-GVU-13-01, GVU Center, College of Computing, Georgia Institute of Technology, 2013. (2-page version in ISWC2013)
- D.10.10 C. Seim, J. Hallam, S. Raghu, T. Le, G. Bishop, and T. Starner. "Perception in Hand-Worn Haptics: Placement, Simultaneous Stimuli, and Vibration Motor Comparisons." GIT-GVU-16-01, GVU Center, College of Computing, Georgia Institute of Technology, 2016.

D.11. Videos, Demonstrations, and Exhibits

- D.11.1 T. Starner, K. Russell, C. Wren, M. Friedman, and A. Pentland. "Trans-Atlantic SURVIVE." Live demonstration of long-distance augmented reality gaming using computer vision for control. Schools Lecture, BT Laboratories, Martlesham, England, October 1994.
- D.11.2 B. Leibe, T. Starner, W. Ribarsky, Z. Wartell, D. Krum, B. Singletery, and L. Hodges. "The Perceptive Workbench." IEEE VR2000 video proceedings. March 2000.
- D.11.3 "The Beware Home" An Aware Home open house for *IEEE International Symposium on Wearable Computers* and GVU demo days. This demonstration showcased work done by undergraduates in CS4801, IMTC, and professors in the CoC. 500 attendees. Atlanta, GA. October 2000.
- D.11.4 D. Ashbrook, E. Young, J. Auxier, M. Gandy, and T. Starner. "Gesture Pendant." Chicago Musuem of Applied Art, Chicago, IL, February 2001
- D.11.5 D. Ashbrook, E. Young, J. Auxier, M. Gandy, and T. Starner. "The Aware Home: Gesture Pendant." ACM'01 Exposition, San Jose, CA, March 2001.
- D.11.6 T. Starner and H. Brashear. "Telesign: Mobile Sign Language Recognition." Demonstration to U.S. Congress. Coalition for National Science Funding Capitol Hill Science Exhibition, Washington, DC 2002.
- D.11.7 T. Starner. "Wearable Computing." CNN Headline News live demonstration, Atlanta, GA, September 2003.
- D.11.8 K. Lyons, D. Plaisted, and T. Starner. "Twiddler typing." CNN Headline News live demonstration, Atlanta, GA, September 2003.
- D.11.9 H. Brashear, V. Henderson, D. Ashbrook, T. Westeyn, and T. Starner. "Telesign: Mobile Sign Language Recognition." CNN Headline News live demo, Atlanta, GA, September 2003.
- D.11.10 H. Brashear, V. Henderson, H. Park, S. Lee, and T. Starner. "Telesign Mobile Sign Language Recognition and CopyCat ASL Tutor." CEASD, Atlanta, GA, April 2005.
- D.11.11 H. Brashear, V. Henderson, and T. Starner. "Telesign: Mobile Sign Language Recognition." RESNA, Atlanta, GA, June 2005.
- D.11.12 T. Westeyn, P. Pesti, and T. Starner. "Blinki: Appliance control through eyeblinks." RESNA, Atlanta, GA, June 2005.
- D.11.13 C. Zeagler and T. Starner. "On You." Museum of Design Atlanta exhibit on output of Mobile and Ubiquitous Computing class collaboration between Industrial Design and College of Computing. Atlanta, GA, March 2008.
- D.11.14 T. Starner, N. Patel, K. Deo, and Z. Zafrulla. "TTYPhone: Enabling Access to Emergency Services for the Deaf." California Deaf and Disabled Telecommunications Program (DDTP). Oakland, CA, September 2008.
- D.11.15 T. Starner, N. Patel, K. Deo, and Z. Zafrulla. "TTYPhone: Enabling Access to Emergency Services for the Deaf." National Emergency Number Association. Orlando, FL, January 2009.
- D.11.16 C. Zeagler and T. Starner. "On You 2." Museum of Design Atlanta exhibit on textile interfaces. Atlanta, GA, June 11-August 14, 2010.
- D.11.17 T. Starner and T. Markow. "Glove helps you play piano like a pro." Live television demo on CNN "The Big I" of Mobile Music Touch, September 15, 2010.

- D.11.18 T. Starner and T. Markow. "The Gloved One: Tech Researchers Hone Fingertip Musicianship." Television demo on 11Alive News of Mobile Music Touch, September 16, 2010.
- D.11.19 C. Zeagler, T. Starner, S. Gilliland, and N. Komor. "Control electronics with clothing." Live television demo on CNN "The Big I" segment of the Textile Swatchbook, October 19, 2010.
- D.11.20 T. Starner. "WHYY Radio Times Interview on Wearable Computers." Live one hour call-in radio broadcast with NPR Philadelphia affiliate. September 26, 2012.
- D.11.21 S. Gilliland and T. Starner. GVU booth at Atlanta Mini Maker Faire. Demonstrations of Mobile Music Touch, Cetacean Hearing Augmentation and Telemetry, E-Textiles, surface mount soldering, and laser cutter. October 6, 2012.
- D.11.22 T. Starner and D. Quigley. CNN Headline News demonstration of using Mobile Music Touch for Passive Haptic Learning and Passive Haptic Rehabilitation. Filmed October 17-25, 2012.
- D.11.23 T. Starner, G. Priest-Dorman, P. Fleischer, M. Senges, W. White, T. Schwanitz, and S. Gianella. Demonstrations of Google Glass for Data Protection Administrator yearly meeting. Berlin, Germany. September 2013.
- D.11.24 T. Starner, G. Priest-Dorman, and A. Costa. Demonstrations of Google Glass for UNESCO. Paris, France. September 2013.
- D.11.25 C. Zeagler and T. Starner. Electronic Textile Interface Swatchbook exhibited at "Shifting Paradigms of Identity: Creative Technology and Fashion." Curated by M. Benitez and N. Palomo-Lovinski. Kent State University Museum. September 2013 - August 2014.
- D.11.26 S. Gilliland and T. Starner. GVU booth at Atlanta Mini Maker Faire. Demonstrations of interactions with Google Glass, Cetacean Hearing Augmentation and Telemetry (wearable computers for two way communication experiments with dolphins), Facilitating Interaction for Dogs with Occupations (wearable computers for interaction with service dogs). October 26, 2013.
- D.11.27 C. Zeagler, T. Starner, T. Hall, K. Swankwiler, and Y. Kaplan. "Meeting the Challenge: the path towards a consumer wearable computer." Exhibit of 74 devices (47 displays) demonstrating the challenges over several decades of creating a consumer wearable computer. 1000 visitors. CHI, Toronto, Canada. April, 2014.
- D.11.28 C. Zeagler, T. Starner, and T. Hall. "Meeting the Challenge: the path towards a consumer wearable computer." On-line exhibit. April 2014. <http://wcc.gatech.edu/exhibition>
- D.11.29 C. Zeagler, T. Starner, T. Hall, K. Swankwiler, and Y. Kaplan. "Meeting the Challenge: the path towards a consumer wearable computer." 800 visitors. The Factory (start-up incubator) opening, Berlin, Germany. June, 2014.
- D.11.30 T. Jordan, M. Reingold, T. Starner, and G. Priest-Dorman. "Google I/O Guidigo Google Glass Wearable Exhibit." San Francisco, CA. June, 2014.
- D.11.31 C. Zeagler, T. Starner, T. Hall, K. Swankwiler, and Y. Kaplan. "Meeting the Challenge: the path towards a consumer wearable computer." Christian Democratic Party headquarters exhibition, Berlin, Germany. July-August, 2014.
- D.11.32 C. Zeagler, T. Starner, T. Hall, K. Swankwiler, and Y. Kaplan. "Meeting the Challenge: the path towards a consumer wearable computer." Deustches Museum (the "largest museum of science and technology in the world"), Munich, Germany. August-September, 2014.

- D.11.33 C. Zeagler, T. Starner, and T. Hall. "Wearable Computing 1989-2014." Google Cultural Institute on-line exhibition. August 2014. <https://www.google.com/culturalinstitute/exhibit/wearable-computing/gQuZsQUI?hl=en-GB>
- D.11.34 C. Zeagler, T. Starner, and T. Hall. "Discover! Wearable Computing Technology." Exhibit and lectures on a subset of the devices shown at the larger exhibit. World Economic Forum - Annual Meeting of New Champions, Tianjin, China. September, 2014.
- D.11.35 C. Zeagler, T. Starner, T. Hall, K. Swankwiler, and Y. Kaplan. "Meeting the Challenge: the path towards a consumer wearable computer." Institute for People and Technology, Georgia Tech. October-December, 2014.
- D.11.36 C. Zeagler, T. Starner, T. Hall, K. Swankwiler, and Y. Kaplan. "Meeting the Challenge: the path towards a consumer wearable computer." Stubbins Gallery, Industrial Design, Georgia Tech. December-January, 2015.
- D.11.37 C. Zeagler, T. Starner, T. Hall, K. Swankwiler, and Y. Kaplan. "On You: A Story of Wearable Computing." Computer History Museum. Mountain View, CA. July-September, 2015. Over 30,000 visitors. Provided several tours for the public, Google, Intel, and Georgia Tech.
- D.11.38 C. Zeagler, T. Starner, T. Hall, K. Swankwiler, and Y. Kaplan. "On You: Wearing Technology," Museum of Design Atlanta. July 2016 – January 2017. >8500 visitors.
- D.11.39 J. Shimizu, J. Lee, M. Dhuliawala, A. Bulling, T. Starner, W. Woo, K. Kunze. "Solar system: smooth pursuit interactions using EOG glasses." ACM Ubicomp. September, 2016.
- D.11.40 C. Seim and T. Starner. "These Gloves Can Teach You to Play the Piano. And Maybe Heal Your Brain." Superhuman documentary series by Freethink Media. May 2018. **6 million views.**
- D.11.41 D. Herzing and T. Starner. "Could artificial intelligence let us speak to dolphins?" BBC Blue Planet. October 2018. **100,000 views.**

E. Research Proposals and Grants (Principal Investigator)

a. Approved and Funded

1. **Computer-Environment Interactions**
B. Singletary, T. Starner, and C. Atkeson Broadband Telecommunications Center
Amount Requested: \$60,000 plus equipment, March 1999.
Result: Funded and renewed (7/1/1999-7/1/2000).
2. **Application and Exploration of Wearable Computers and Intelligent Environments**
T. Starner and B. Singletary
Broadband Institute
Amount Requested: \$30,000, April 2000.
Result: Funded (7/1/2000-7/1/2001).
3. **Developing Contextual Cues for Just-in-time Information Retrieval on Wearable Computers**
T. Starner
NSF-CAREER Program 2001
Amount Requested: \$549,738, July 2000.
Result: Funded (2/1/2001–2/1/2006)

4. **Application and Exploration of Wearable Computers and Intelligent Environments**
T. Starner and B. Singletary
Broadband Institute
Amount Requested: \$30,000, April 2001.
Result: Renewal (7/1/2001-7/1/2002).
5. **Telesign**
T. Starner and H. Brashear
GVU
Amount Requested: one 9-month GRA (~\$20,000), Sept. 2001.
Result: Funded (10/1/2001-5/1/2002).
6. **Undergraduate Opportunities Developing Contextual Cues for Just-in-time Information Retrieval on Wearable Computers**
T. Starner
NSF-CAREER REU addition 2002
Amount Requested: \$19,825, February 2002.
Result: Funded (2/28/2002–2/28/2003)
7. **Workshops in Wearable Computing**
T. Starner
DARPA, Augmented Cognition
Amount Requested: \$15,000 May 2002
Result: Funded (6/2002).
8. **Mobile HCI**
T. Starner and K. Lyons
Panasonic
Result: \$9,500 in mobile phones.
9. **ETH/Georgia Tech On-Campus Cooperative Research in Wearable Computing**
T. Starner
ETH (Swiss Federal Institute of Technology Zurich) Wearable Computing Laboratory
Amount Requested: 70,500CHF
Result: Funded (6/2002-12/2002).
10. **Favor Exchange Through Location Prediction Based on GPS**
T. Starner
Orange
Amount Requested: \$16,044 in equipment and service.
Result: Gifted (7/2002-12/2002).
11. **Augmenting a Program Manager**
T. Starner
DARPA, Cognitive Systems seedling Amount Requested: \$100,000 October 2002
Result: Funded (2/2003).
12. **The Gesture Panel: Low Cognitive Load Control of Car Automation Through Gross Gesture**
T. Starner
Daimler Chrysler
Amount: \$32,500
Result: Gifted (2/2003)
13. **Recognizing Blink Patterns for Development of Assistive Technologies**
GVU

T. Westeyn, T. Starner, M. Moore, and S. Sprigle
Amount Requested: one 9-month GRA (~\$20,000), Sept. 2003.
Result: Funded (2003-2004).

14. **Undergraduate Opportunities Developing Contextual Cues for Just-in-time Information Retrieval on Wearable Computers 2004**
T. Starner
NSF-CAREER REU addition 2004
Amount Requested: \$19,825, December 2004.
Result: Funded (2/28/2004–2/28/2005)
15. **Undergraduate Opportunities Developing Contextual Cues for Just-in-time Information Retrieval on Wearable Computers 2005**
T. Starner
NSF-CAREER REU addition 2005
Amount Requested: \$30,000, October 2004.
Result: Funded (2/28/2005–2/28/2006)
16. **Telesign: Towards a One-Way American Sign Language Translator**
T. Starner
NSF Universal Access
Amount Requested: \$749,000 over 3 years, December 2004.
Result: Funded \$550,001 (4/15/2005–4/15/2008)
17. **GroupWear**
T. Starner, A. Pentland, I. Essa, G. Abowd, C. Isbell, E. Price, S. Intille, and H. Lieberman
DARPA IPTO ASSIST
Amount Requested: \$1.99 million over 1 year with options.
Result: Combined with IBM proposal and funded at \$2,169,326 (GT share: \$659,815) over 1 year. \$200,000 extension added.
18. **Enhancing Tactical Decision-Making in Navy Seal Operations**
T. Starner and B. Singletary (Applied Systems Intelligence, Inc.)
Office of Naval Research SBIR
Amount Requested: \$100,000 (GT share: \$30,000+), January 2005.
Result: Funded (5/19/2005–11/19/2005)
19. **Mobile Gesture Interfaces**
T. Starner
ETRI (Korea)
Amount Requested: \$80,000, August 2005
20. **Inexpensive, Mobile Wound Measurement**
T. Starner
CATEA
Amount Requested: ~\$10,000 (1 GRA semester), May 2005.
Result: Funded (8/2005-12/2005)
21. **Teacher Opportunities Developing Interfaces for Signing 2006**
T. Starner
NSF Telesign RET addition 2008
Amount Requested: \$20,000, March 2006.
Result: Funded (3/31/2006–3/31/2007)
22. **CopyCat: Learning Through Signing**
T. Starner, H. Hamilton, A. Bruckman, H. Brashear, and V. Henderson

Institute for Education Science, Dept of Education
Amount Requested: \$1,490,000 over 3 years, October 2006. Result: Funded (3/2007–3/2010)

23. **Doctoral Consortium for ISWC**
T. Starner and D. Wigdor
NSF
Amount Requested: \$20,000, April 2007.
Result: Funded for October 2007 conference.
24. **Crowdcasting**
T. Starner and I. Essa (Nikil Jayant)
Alcatel-Lucent
Amount Requested: \$75,000, April 2007.
Result: Funded.
25. **ISWC Corporate Sponsorship**
T. Starner and D. Wigdor
Nokia
Amount Requested: \$10,000, April 2007. Result: Funded for October 2007 conference.
26. **Undergraduate Opportunities Developing Interfaces for Signing 2008**
T. Starner
NSF Telesign REU addition 2008
Amount Requested: \$20,000, March 2007.
Result: Funded (3/31/2007–3/31/2008)
27. **Wristwatch Interfaces for Microinteractions**
T. Starner
NSF HCC
Amount Requested: \$450,000 over 3 years, December 2007 Result: Funded (7/2008–7/2011)
28. **Dancing in the Streets**
T. Starner and N. Patel
Humana
Amount Requested: \$50,000, January 2008
Result: Funded (1/2008–1/2009)
29. **Mobiphos**
T. Starner, N. Patel, and J. Clawson
Samsung
Amount Requested: \$75,000, January 2008
Result: Funded (1/2008–1/2009)
30. **Brainsign: Recognizing American Sign Language from Brain Signals**
T. Starner and M. Moore Jackson
NSF
Amount Requested: \$115,000, March 2008
Result: Funded \$35,000 (6/2008-6/2009)
31. **MUTE Add-on: Brainsign: Transmitting decisions using brain activity as non-vocal language**
T. Starner and M. Moore Jackson
DARPA
Amount Requested: \$115,000, March 2008
Result: Funded \$80,000 (5/2008-10/2009)

32. **Microinteractions: Touchwatch Input and Electrictouch Feedback**
 T. Starner
 ETRI (Korea)
 Amount Requested: \$140,000, July 2008 Result: Funded (8/2008–1/2009)
33. **Automatic WhiteOut Pilot User Study** T. Starner
 Nokia
 Amount Requested: \$30,000, 2008 Result: Funded \$8,000
34. **PianoTouch**
 Center for Music Studies Seed Grant
 Amount Requested: one 4.5-month GRA (~\$20,000), Sept. 2008.
 Result: Funded (2009).
35. **Dancing in the Streets v2.0**
 T. Starner and N. Patel
 Humana
 Amount Requested: \$50,000, January 2009
 Result: Funded (1/2008–1/2009)
36. **Undergraduate Opportunities Developing Wristwatch Interfaces 2009**
 T. Starner
 NSF Wristwatch REU addition 2009
 Amount Requested: \$32,000, March 2009.
 Result: Funded \$16,000 (3/31/2009–3/31/2010)
37. **On-the-go Interactions: Textile Interfaces and Tactile Feedback**
 T. Starner
 ETRI (Korea)
 Amount Requested: \$60,000, June 2009
 Result: Funded (6/2009–1/2010)
38. **Prototyping Computing Devices**
 T. Starner
 College of Computing Technology Fee
 Amount Requested: \$21,000, June 2009
 Result: Funded
39. **Undergraduate Opportunities in Wristwatch Interfaces for Micro-Interactions 2010**
 T. Starner
 NSF Wristwatch REU addition 2010
 Amount Requested: \$30,000, March 2010.
 Result: Funded \$30,000 (6/02/2010–5/31/2011)
40. **SMARTSign: Learning Sign Language Via Mobile Phone**
 T. Starner, H. Hamilton, A. Bruckman, and V. Henderson
 Institute for Education Science, Dept of Education
 Amount Requested: \$1,500,000 over 3 years, June 2009.
 Result: Funded (3/2010–3/2013)
41. **FatThumbs: Improving Texting on mini-QWERTY keyboards**
 T. Starner
 Google Research Award
 Amount Requested: \$95,528, April 2010
 Result: Funded \$45,000

42. **MAGIC: A Gesture Design Tool that Combats False Positives in Everyday Life**
T. Starner
Google Research Award
Amount Requested: \$95,528, April 2010
Result: Funded \$50,000
43. **Textile Sensors and Interfaces**
T. Starner
ETRI (Korea)
Amount Requested: \$64,000, June 2010
Result: Funded (8/2010–1/2011)
44. **Inventure Labs (rapid prototyping)**
T. Starner, C. Zeagler, and C. Forest
Technology Fee proposal, collaboration with Craig Forrest (ME) and Clint Zeagler (ID)
Amount Requested: \$125,382, June 2010
Result: Funded \$120,000
45. **Interface Textiles: Integrating Conductive Ink and Conductive Embroidery to Create Mobile Interfaces with Feedback**
T. Starner
ETRI (Korea)
Amount Requested: \$78,000, March 2011
Result: Funded (5/2011–1/2012)
46. **Electronic Textiles Interface Swatch Book**
T. Starner and C. Zeagler
National Endowment for the Arts
Amount Requested: \$100,000, March 2011
Result: Funded \$20,000
47. **SMARTSign Mobile: Helping Hearing Parents Learn to Communicate with Their Deaf Children**
T. Starner
Nokia
Amount Requested: \$33,000, November 2011
Result: Funded \$33,000, (1/2012)
48. **HCC: Small: Passive Tactile Learning and Rehabilitation**
T. Starner
Georgia Tech
NSF
Amount Requested: \$500,000 over 3 years, December 2011
Result: Funded. (9/2012-9/2015)
49. **Undergraduate Opportunities in Passive Haptic Learning and Rehabilitation 2014**
T. Starner
NSF REU addition 2014
Amount Requested: \$24,000, April 2014.
Result: Funded \$24,000 (4/02/2014–3/31/2015)
50. **Gift for School of Interactive Computing**
Assurant
\$10,000, September 2014.

51. **Gift in Support of Wearable Computing and Jewelry**
C. Zeagler and T. Starner
Sunjewels
\$25,000, December 2014.
52. **Facilitated Google gifts and contracts of approximately \$875,000 and a two for one equipment purchase of 70 Glass devices in 2014-2015.**
53. **Passive Haptic Rehabilitation for Stroke**
T. Starner, S. Wolf, and C. Seim
GVU Research & Engagement Grant Proposal
\$25,000, September 2016.
54. **PARQR: Augmenting Piazza with an automated post retrieval tool.**
T. Starner
College of Computing
~\$50,000 (2 GRA semesters, web hosting, press releases), December 2017.
55. **JR Watson: Combatting Assignment Plagiarism on Work-for-hire Web Sites.**
T. Starner
College of Computing
~\$50,000 (2 GRA semesters, web hosting, press releases), December 2017.
56. **PARQR: Augmenting Piazza with an automated post retrieval tool.**
T. Starner
College of Computing
~\$75,000 (3 GRA semesters), August 2018.
57. **JR Watson: Combatting Assignment Plagiarism on Work-for-hire Web Sites.**
T. Starner
College of Computing
~\$50,000 (2 GRA semesters), August 2018.
58. **BodyBraille: Training Locked-in Patients to Communicate with Attempted Movement.**
T. Starner & Melody Jackson
Center for Advanced Brain Imaging
~\$12,000 (20 fMRI hours with technical support), October 2018.
59. **PARQR: Augmenting Piazza with an automated post retrieval tool.**
T. Starner
College of Computing
~\$75,000 (3 GRA semesters), December 2018.
60. **JR Watson: Combatting Assignment Plagiarism on Work-for-hire Web Sites.**
T. Starner
College of Computing
~\$50,000 (2 GRA semesters), December 2018.
61. **Pitched project and arranged a Google gift of \$50,000 in December 2018 to Thomas Ploetz.**
62. **Solicited proposal and facilitated Google gift of \$63,026 in February 2019 to Thomas Ploetz.**
63. **Pitched project and arranged Google gift of \$63,687 in February 2019 to Melody Jackson.**

b. Pending

1. **CopyCat**

T. Starner
Georgia Tech
Google AI Impact Challenge
\$1,050,000 over 3 years (2019-2022).

2. **Collaboration to Provide Open Prototyping Facilities to Campus**

T. Starner & C. Forest
Georgia Tech Technology Fee 2019
\$168,426.

3. **Stimulus Labs**

T. Starner
Georgia Research Alliance 2019
\$50,000.

c. Not Funded (last three years)

1. **CHS: Small: Exploring Wearable Interfaces for Silent Speech Recognition**

T. Starner
Georgia Tech
NSF CISE
Amount Requested: \$500,000 (2015-2017).

2. **CHS: Small: Order Picking Assisted by Head-Up Displays**

T. Starner
Georgia Tech
NSF Computer Human Systems
Amount Requested: \$500,000 (2015-2018).

3. **RI: Large: Collaborative Research: Communication Signal Imaging: Enabling Quantitative Analysis and Discovery of Animal Behavior and Vocalizations**

T. Starner, I. Essa, D. Herzing, and M. Lammers
NSF Robust Intelligence
A collaboration with the Wild Dolphin Project and the University of Hawaii
Amount Requested: \$3,000,000 (2015-2019).

4. **CHS: Small: Passive Tactile Stimulation for Learning Motor Tasks and Rehabilitation**

T. Starner and C. Seim
Georgia Tech
NSF Cyber Human Systems
Amount Requested: \$500,000 (2016-2019).

5. **CopyCat: Automatic Verification of ASL in an Educational Game for Deaf Children**

T. Starner and H. Hamilton
NSF CHS
Amount Requested: \$500,000 over 3 years (2017-2020).

6. **AitF: Enabling the Quantitative Analysis of Animal Communication**

T. Starner and S. Vempala
NSF Algorithms in the Field
Amount Requested: \$800,000 over 3 years (2017-2020).

7. **BIGDATA: IA: Discovery of Hierarchical Structures in Communication and Behavior**
 T. Starner, C. Dovrolis, B. Dilkina, I. Essa, D. Herzing, and T. Ploetz
 NSF BIGDATA
 Amount Requested: \$1,200,000 over 3 years (2017-2020) plus \$150,000 for Google Cloud support.
8. **CopyCat Classifiers**
 T. Starner and H. Hamilton
 NSF CHS
 Amount Requested: \$500,000 over 3 years (2018-2021).
9. **BIGDATA: IA: Discovery of Hierarchical Structures in Communication and Behavior**
 T. Starner, K. Dovrolis, and T. Ploetz
 NSF BIGDATA
 Amount Requested: \$1,414,858 over 3 years (2019-2022).
10. **TRIPODS+X: A Quantitative Theory of Natural Communication**
 T. Starner, D. Herzing, S. Vempala
 NSF TRIPODS
 Amount Requested: 600,000 over 5 years (2018 – 2023).
Declined internally by TRIAD.

F. Research Proposals and Grants (Contributor)

a. Approved and Funded

1. **Augmenting the Capture and Understanding of Everyday Experiences**
 NSF-CISE Research Instrumentation grant.
 G. Abowd, C. Atkeson, I. Essa, B. MacIntyre, B. Mynatt, C. Potts, U. Ramachandran, B. Ribarsky, S. Rugaber, and T. Starner.
 Amount Requested: \$160,000 (including \$40,000 matching from Georgia Tech).
 Result: Funded (2/15/1999–1/31/2002)
2. **A Distributed Programming Infrastructure for Integrating Smart Sensors**
 U. Ramachandran, T. Starner, S. Deweerth, K. Mackenzie
 NSF ITR/SY
 Funded: \$1,350,000 (9/1/2001 - 9/30/2006)
3. **Aware Home Research Initiative.**
 A consortium of companies that includes Intel, MERL, Motorola, Accenture, and Hewlett Packard.
 G. Abowd, A. Bobick, I. Essa. B. Macintyre, B. Mynatt, and T. Starner.
 Funded: ~\$410,000 per year.
 Consortium Established: Summer 2000.
4. **Indoor Orientation and Wayfinding Aid for Vision Loss**
 J. Devita, D. Ross, and T. Starner
 NIH SBIR (through Charmed Technology)
 Amount Requested: \$100,000 August 2002
 Result: Granted (1/2003)
5. **Rehabilitation Engineering Research Center Mobile Wireless Technologies for Persons With Disabilities**

National Institute on Disability and Rehabilitation Research
A collaboration of GCATT, Shepherd Center, and Georgia Tech.
Funded: \$5,000,000 (2002-2006).

6. **Point of Care Support for Pediatric Clinicians using Nomadic Computing**

GVU

J. Jacko, B. Walker, and T. Starner.

Amount Requested: one 9-month GRA (~\$20,000), July 2005.

Result: Funded (2005-2006).

7. **Rehabilitation Engineering Research Center Mobile Wireless Technologies for Persons With Disabilities**

National Institute on Disability and Rehabilitation Research

A collaboration of GCATT, Shepherd Center, and Georgia Tech.

Funded: \$5,000,000 (2007-2011).

8. **Rehabilitation Engineering Research Center Mobile Wireless Technologies for Persons With Disabilities**

National Institute on Disability and Rehabilitation Research

A collaboration of GCATT, Shepherd Center, and Georgia Tech.

Funded: \$5,000,000 (2012-2016).

9. **HCC: Small: FIDO – Facilitating Interactions for Dogs with Occupations: Wearable Computing for Two-Way Communication with Assistance Dogs**

M. Moore Jackson, T. Starner, and C. Zeagler

NSF Human Centered Computing

Funded: \$500,000 (2013-2015).

10. **SCH:INT: Creating Interactive Models of Healthcare Journeys to Improve Patient-Centered Care and Patient Engagement**

B. Mynatt, J. Clawson, and T. Starner

Georgia Tech

NSF & NIH

Funded: \$2,000,533 (2014-2018).

11. **Functional MRI in Service Dogs: Field Testing and Canine Interfaces**

G. Berns, M. Spivak, M. Jackson, T. Starner, and P. Mundell

Emory & Georgia Tech

DARPA

Funded: \$200,000 Georgia Tech component (2015-2016).

b. Pending

1. **SCH:INT: Interactively Modeling Cancer Journeys to Connect Patients with their Care Networks**

B. Mynatt, M. Jacobs, and T. Starner

Georgia Tech

NSF & NIH

\$2,000,000 over 3 years (2019-2022).

2. **CUB (Cetacean Underwater Behavioral-State) Detector**

D. Herzing and T. Starner

Wild Dolphin Project and Georgia Tech

Google AI Impact Challenge

\$1,300,000 over 3 years (2019-2022).

c. Not Funded (last three years)

1. First-Person AI

I. Essa, T. Starner, and C. Kemp
Paul Allen Foundation
Amount Requested: \$1,000,000 (2015-2017).

2. Facilitated submission of over \$1.4M in proposals to Google and google.org in 2015.

3. Semi-autonomous Canine-Robotic Partnerships (SCaRPs)

D. Roberts, T. Starner, M. Jackson, ...
NSF Computing Physical Systems
A collaboration with NCState.
Amount: \$7,000,000 (2016-2020).

4. Proprioceptive and Tactile Enhanced On-Body Interface for Aiding in Procedural Cognitive Tasks

C. Zeagler & T. Starner
NASA Research and Technology Development to Support Crew Health and Performance in Space Exploration Missions
Amount: \$300,000 (2016-2017).

5. Dog Computer Interaction: Developing a New Vocabulary for Computer Mediated Communication with Dogs

D. Roberts, M. Jackson, & T. Starner
NCState and Georgia Tech
NSF Expeditions
Amount: \$10,000,000 (2017-2021).

6. CopyCat SBIR

C. Vinopol, T. Starner, and H. Hamilton
NSF CHS
Amount Requested: \$1,050,000 for Phases I&II (2017-2019).

7. LASSIE – Local Activity Sensing Supporting working dog Interactions for Emergencies

M. Jackson and T. Starner
NSF CHS
Amount Requested: \$2,000,000 over 3 years (2018-2021).

8. SCH:INT Interactively Modeling Cancer Journeys to Connect Patients with their Care Networks

B. Mynatt, M. Jacobs, and T. Starner
NSF
Amount Requested: \$2,000,000 over 3 years (2018-2021).

9. Job Coaching and PTL - Future of Work at the Human-Technology Frontier (FW-HTF)

P. Presti, K. Milcus, C. Seim, and T. Starner
NSF CHS
Amount Requested: \$3,000,000 over 5 years (2018-2023).

G. Research Honors and Awards

1. United States Air Force Laboratory Graduate Fellow. One of 25 chosen from 2031 applicants. Provides for full expenses for three years towards a PhD, 1991.

2. Named one of MIT Technology Review's TR100. "100 individuals under 35 who exemplify the spirit of innovation." November 1999.
3. Best Paper Award, IEEE VR 2000 for "The Perceptive Workbench: Towards Spontaneous and Natural Interaction in Semi-Immersive Virtual Environments." March 2000.
4. NSF CAREER Award, 2001.
5. Named one of Georgia Trend magazine's Top 40 under 40. "40 rising stars in business, education, and politics." October 2001.
6. Nominated by Georgia Tech for the NIH Director's Pioneer Award (~3.75M\$ over 5 years). Finalist 2004.
7. Nominated for Best Paper Award, IEEE ISWC for "The Impact of Limited Visual Feedback on Mobile Text Entry Using the mini-QWERTY and Twiddler Keyboards," 2005.
8. Nominated for Best Paper Award, IEEE ISWC for "Discovering Characteristic Actions from On-Body Sensor Data," 2006.
9. Nominated for Best Paper Award, IEEE ISWC for "Hambone: a bio-acoustic gesture interface," 2007.
10. Selected for Gartner Fellows Interview (research note and on-line articles). Previous interviewees include Dean Kamen, James Burke, Jeff Hawkins, Alvin Toffler, and Craig Mundie in 2008.
11. Nominated for Best Short Paper Award, MobileHCI for "A model of two-thumb chording on a phone keypad," 2009.
12. Nominated for Best Paper Award, ISWC for "Textile Interface Swatchbook: Creating Graphical User Interface-like Widgets with Conductive Embroidery," 2010.
13. Nominated as a White House "Champion of Change" by the National Center for Special Education Research, Institute of Education Sciences for work with deaf children and their hearing parents, 2012.
14. GVU Impact Award for research innovation and excellence, 2012 (awarded every five years).
15. Selected Google Glass awards and honors:
 - (a) "How It Feels" and "One Day" videos accumulate more than 25,000,000 views each and become the #1 and #2 most viral product videos released in company's history 2012.
 - (b) Nominated for Best Technology Achievement Crunchie award 2012.
 - (c) Tomorrow Awards Fall winner 2012.
 - (d) Contagious Magazine's Most Contagious Technology winner 2012.
 - (e) **Time Magazine's Best Invention of the Year** award for Google Glass 2012.
 - (f) T3's Innovation of the Year 2013.
 - (g) **CNN's Top 10 Inventions** 2013.
 - (h) Laptop Magazine's Game Changer Award 2013.
 - (i) Popular Science's Grand Award: Best of What is New 2013.
 - (j) ComplexTech's Best 13 Tech Products 2013.
 - (k) Digital Trends's Best Mobile Product 2013.
 - (l) Los Angeles Times's Top 10 Gadget 2013.

- (m) Named by **Time Magazine** one of **“The 50 Most Influential Gadgets of All Time.”** along with the Victrola Record Player, Kodak Brownie camera, Sony Walkman, Atari 2600, Motorola Dynatac 8000x cellphone, Palm Pilot, Blackberry 6210, Apple iPhone, and Fitbit, May 2016.
- 16. Finalist for the Wellness Technology Award for Mobile Music Touch during Design Week Milan, Italy 2013.
- 17. Selected as an ACM “Best Paper of 2012” for “Monitoring children’s developmental progress using augmented toys and activity recognition” in 2013.
- 18. Named a Foreign Policy magazine 100 Leading Global Thinkers (along with Elon Musk) in 2013.
- 19. Best Paper Award, ACM/IEEE International Symposium on Wearable Computers (ISWC) for “FIDO - Facilitating Interactions for Dogs with Occupations: Wearable Dog-Activated Interfaces” Zurich, Switzerland 2013.
- 20. Selected to give a Computer History Museum oral history on wearable computing. Mountain View, CA 2014.
- 21. Nominated for Smithsonian Magazine’s People’s Design Award, presented by the Cooper Hewitt, Smithsonian Design Museum, 2014.
- 22. Nominated for Best Paper Award, ISWC for “The Tongue and Ear Interface: A Wearable System for Silent Speech Recognition,” 2014.
- 23. Nominated for Best Paper Award, ISWC for “A Comparison of Order Picking Assisted by Head-Up Display (HUD), Cart-Mounted Display (CMD), Light, and Paper Pick List,” 2014.
- 24. Finalist for Lemelson-MIT Prize (\$500,000 award for mid-career inventors) 2016.
- 25. Elected to the ACM CHI Academy 2017.
- 26. Awards to students 2017:
 - (a) Richard Li, Georgia Tech College of Computing Outstanding Masters Research 2017.
 - (b) Richard Li, Best Computing Poster Award Georgia Tech Career, Research, and Innovation Development Conference.
 - (c) Richard Li, Runner-up Masters thesis competition.
 - (d) Sarthak Srinivas & Charu Thomas, \$100,000 winner of Atlanta Startup Battle 2017.
 - (e) Sarthak Srinivas & Charu Thomas, Second place Microsoft Imagine Cup World Finals 2017.
 - (f) Sarthak Srinivas & Charu Thomas, Third place Microsoft Imagine Cup US nationals 2017.
 - (g) Sarthak Srinivas & Charu Thomas, Finalist Inventure Prize 2017.
 - (h) Sarthak Srinivas & Charu Thomas, Finalist National Collegiate Inventors Competition.
 - (i) Aditya Vishwanath, EDS Outstanding Rising Senior Award in Computing 2017.
 - (j) Angela Vujic, Outstanding Undergraduate Research Award in Computing 2017.
 - (k) Jessica Rosenfeld, Outstanding Senior in Computing 2017.
 - (l) Maia Jacobs nominated for ACM Best Dissertation Award 2017 (thesis committee).

27. Best Paper Award for “RF-Pick: Comparing Order Picking Using a HUD with Wearable RFID Verification to Traditional Pick Methods,” 62 long papers submitted. Final selection based in part on conference presentation. ACM ISWC 2018.
28. Best Demo Award for “I/O Braid: Scalable Touch-Sensitive Lighted Cords Using Spiraling, Repeating Sensing Textiles and Fiber Optics.” ACM UIST 2018.
29. Best Poster Award for “ZEUSSS: Zero Energy Ubiquitous Sound Sensing Surface Leveraging Triboelectric Nanogenerator and Analog Backscatter Communication” ACM UIST 2018.
30. Awards to students 2018:
 - (a) Caitlyn Seim, Diversity Inclusive Excellence Award 2018
 - (b) Caitlyn Seim, Foley Scholar Award 2018
 - (c) Caitlyn Seim, 2nd place Get-a-move-on hackathon for Passive Haptic Learning of Dance 2018
 - (d) Caitlyn Seim, interactive poster (1% of submissions) at Society for Neuroscience
 - (e) Aditya Vishwanath, Outstanding Senior Award 2018
 - (f) Jason Wu, Outstanding Undergrad Research Award 2018.
 - (g) Elli Madeleine Goebel, 2nd place computer science division of Undergrad Research Symposium 2018
 - (h) Cheng Zhang nominated for ACM Best Dissertation Award 2018 (thesis committee).
31. Awards to students 2019:
 - (a) Caitlyn Seim, Stanford Neuroscience Translate grant 2019.

III. SERVICE

A. Professional Activities

A.1. Memberships and Activities in Professional Societies

- Chair, steering committee for ACM International Symposium on Wearable Computers 2010-2018.
- Representative of ISWC for steering committee for ACM Ubicomp and the IMWUT journal 2015-2018.
- Chair, IEEE Special Topics Committee on Wearable and Ubiquitous Technologies 2013-2018.
- Broadening Participation Mentor, Ubicomp/ISWC 2018.
- CRA Undergraduate Awards Committee 2013.
- Chair, IEEE Technical Committee on Wearable Information Systems 2010-2012.
- Co-Chair, IEEE Technical Committee on Wearable Information Systems 2008-2010.
- NSF Grant Panels and Site Reviews: 2000, 2002, 2003, 2005, 2008, 2009, 2010, 2013.
- International Science and Engineering Fair (ISEF) judging for Chinese Association of Science and Technology (CAST) prize, 2008.
- Member, Institute of Electrical and Electronics Engineers (IEEE) Computer Society.
- Member, Association for Computer Machinery.

A.2. Conference Committee Activities

1. Founder and local arrangements chair, *IEEE International Symposium on Wearable Computers*. (ISWC) 1997.
2. General Chair, ISWC 2007
3. Publicity Chair, ISWC 2003.
4. General Co-chair, ISWC 2000.
5. Publicity Co-chair, ISWC 1999.
6. Co-chair Interfaces for Wearable Computers workshop at IEEE VRAIS 1998.
7. Program Committee, *IEEE International Symposium on Wearable Computers (ISWC)*: 1998, 2003, 2004, 2005, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018.
8. Program Committee, ACM SIGCHI/SIGGRAPH Symposium on User Interface Software and Technology (UIST): 2005, 2010.
9. Program Committee, International Forum on Applied Wearable Computing 2005.
10. Program Committee, Pervasive Computing 2004.
11. Program Committee, International Conference on Multimodal Interfaces - Perceptual User Interfaces (ICMI-PUI) 2003.
12. Program Committee, International Symposium Mixed and Augmented Reality (ISMAR) 2002.
13. Program Committee, International Conference on Multimodal Interfaces (ICMI) 2002.
14. Program Committee, International Symposium Mixed Reality (ISMR) 2001.
15. Program Committee, International Symposium Augmented Reality (ISAR) 2000.
16. Program Committee, Boeing Workshop on Wearable Computers 1996.
17. Panel Organizer on “Opportunities in Wearable Computing and Augmented Reality” ISWC/ISMAR 2004.
18. Paper Reviewer, ACM SIGCHI/SIGGRAPH Symposium on User Interface Software and Technology (UIST): 1999, 2000, 2001, 2003, 2004, 2008, 2009, 2011, 2014, 2017, 2018.
19. Paper Reviewer, ACM Conference on Human Factors in Computing Systems (CHI): 2004, 2006, 2009, 2010, 2011, 2012, 2014, 2015.
20. Paper Reviewer, ACM Interactive Tabletops and Surfaces 2012.
21. Paper Reviewer, Mobile HCI 2011.
22. Paper Reviewer, Eurographics 2010.
23. Paper Reviewer, Pervasive 2010.
24. Paper Reviewer, Wireless RERC State of Technology Conference on Wireless Emergency Communications 2009.
25. Paper Reviewer, Ubicomp 2004, 2008.
26. Paper Reviewer, IEEE Virtual Reality 2006.

27. Paper Reviewer, ACM SIGGRAPH Emerging Technology 2005.
28. Paper Reviewer, International Conference on Mobile Systems, Applications, and Services (MobiSys) 2003.
29. Paper Reviewer, International Symposium Mixed and Augmented Reality (ISMAR) 2003.
30. Paper Reviewer, Interact 2003.
31. Paper Reviewer, Perceptual User Interface (PUI) 2001.
32. Paper Reviewer, IEEE Multimedia 1999.

B. On-Campus Georgia Tech Committees

1. 2017 Awards Committee
2. 2016 Awards Committee
3. 2017 School of Interactive Computing, Promotion and tenure subcommittee
4. 2016 School of Interactive Computing, Promotion and tenure subcommittee
5. 2015 School of Interactive Computing, Promotion and tenure subcommittee
6. 2014 School of Interactive Computing, Promotion and tenure subcommittee
7. 2010 College of Computing, Undergraduate Curriculum Committee.
8. 2003-2004 College of Computing, Faculty Recruiting Committee.
9. 2002-2004 College of Computing, Awards Committee.
10. 2001-2004 General Faculty Assembly.
11. 1999-2000 College of Computing, Undergraduate Opportunities in Computing.

C. Special Assignments at Georgia Tech

1. Undergraduate Research Opportunities in Computing (UROC) Coordinator 2014-2017.
2. GVU Rapid Prototyping Laboratory Director 2003-present.
3. Intelligent Systems qualifying exam coordinator 2007, 2008, 2009, 2010, 2012, 2013, 2014, 2015, 2016, 2017, 2018.
4. PhD Recruiting 2010 and 2011.
5. Devices Thread Shepherd 2007-2010.
6. Threads Committee 2005-2006.
7. Ad Hoc Committee on PhD student funding, College of Computing, Fall 2003.
8. Student Fellowship benchmark and advocating 2002.

D. External Member of Ph.D. Examining Committees

1. Maja Stikic, Technische Universität Darmstadt, June 2009.
Thesis Title: "Towards Less Supervision for Scalable Recognition of Daily Activities"
Principal Advisor: Dr. Bernt Schiele
2. Hendrik Witt, Universität Bremen, October 2007.
Thesis Title: "User Interface for Wearable Computers: Development and Evaluation"
Principal Advisor: Dr. Otthein Herzog
3. Rich DeVaul, MIT Media Laboratory., June 2004.
Thesis Title: "The Memory Glasses: Wearable Computing for Just-in-Time Memory support."
Principal Advisor: Dr. Alex Pentland

E. Consulting, Advisory, and Other External Appointments

- Zoolingua Advisory Board 2018.
- Google Faculty Research Award reviewer, Spring 2013, Spring 2014, Summer 2014, Fall 2014, Summer 2015, Fall 2015, Fall 2016, Spring 2017, Fall 2017
- Consultant, XPrize on Artificial Intelligence, Summer 2015
- Ubimax Advisory Board 2015-present.
- Google Internet of Things Award reviewer 2015.
- Google Glass Academic Explorer program coordinator 2012-2014.
- Google Glass Accessibility Workshop, May 2014.
- Accenture External Advisory Board, 2014.
- Scientific Advisor, WearIT@Work EU Framework 6 grant, Bremen Germany, 2004–2009.
- Consultant, Brighthouse, Atlanta, GA 2007.
- Consultant, DARPA IXO, Arlington, VA 2007.
- Consultant, Nth Power, San Francisco, CA 2007.
- Consultant, CNN, Atlanta, GA 2004.
- Consultant, Synectics, Cambridge, MA 2004.
- Consultant, BrownTech, Atlanta, GA 2004.
- Consultant, LECG, Palo Alto, CA 2004.
- Consultant, Charmed Technology, Santa Monica, CA 1999-2003.
- Consultant, Teltech, Minneapolis, MN 1998.
- KTAADN, Inc. 1998.
- Audio Velocity, Cambridge, MA 1997.

IV. NATIONAL AND INTERNATIONAL PROFESSIONAL RECOGNITION

A. Invited Conference Session Chair

1. Boeing Workshop on Wearable Computer Systems 1996, Renton, WA.
2. ISWC 1998, ISWC 2003, ISWC 2005.
3. Face and Gesture 2004.
4. IFAWC 2005.
5. Many more than I can remember.

B. Editorial and Reviewer Work for Technical Journals and Publishers

1. Wearable Computing department editor, Pervasive Computing 2002-2006.
2. Reviewer, ACM Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT), IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI), Communications of the ACM, International Journal Human Computer Systems (IJHCS), Pattern Recognition Letters, Journal of Artificial Intelligence Research (JAIR), Computer Vision and Image Understanding, IEEE Transactions on Robotics, IEEE Transactions on MultiMedia, ACM Journal on Special Topics in Mobile Networking and Applications (MONET), IEEE Computer Graphics & Applications (CGA), Graphical Models and Image Processing, Presence, Personal and Ubiquitous Computing, IBM Systems Journal, ACM Computing Surveys, ETRI, IEEE Pervasive Computing magazine, and several other leading journals for Human Computer Interaction, Computer Vision, and Pattern Recognition.

C. United States Utility Patents

1. "Interactive Cord with Resistance Touchpoints." T. Starner, J. Moeller, K. Sawyer, C. Lee, S. Raphael. March 5, 2019. (US10222924).
2. "Content Capture." T. Starner, M. Balez, N. Patel. January 29, 2019. (US10194121).
3. "Preventing False Positives with an Interactive Cord." T. Starner, K. Sawyer, G. Priest-Dorman. December 4, 2018 (US10149036).
4. "Magnetometer-Based Gesture Sensing With A Wearable Device." T. Starner, M. Johnson, and E. Keyes. Awarded December 4, 2018 (US10146323).
5. "Methods, systems, and apparatuses to convey chorded input." C. Seim and T. Starner. Awarded November 6, 2018 (US10121388).
6. "Interactive Cord with Integrated Light Sources." T. Starner, K. Sawyer, G. Priest-Dorman. October 23, 2018 (US10111304).
7. "Authentication Using an Interactive Cord." T. Starner and K. Sawyer. September 25, 2018 (US10083289).
8. "Interactive Cord." T. Starner, K. Sawyer, and G. Priest-Dorman. August 14, 2018 (US10047459).
9. "Systems and Methods for Remotely Activating an Emergency Protocol." T. Starner and R. Shah. July 31, 2018 (US10037682).

10. "Device Control Utilizing Optical Flow." T. Starner and M. Johnson. July 24, 2018 (US9466112).
11. "Password Management." T. Starner and M. Johnson. May 22, 2018 (US9979547).
12. "Expectation Maximization to Determine Position of Ambient Glints." T. Starner. April 3, 2018 (US9934583).
13. "Resolution of Directional Ambiguity on Touch-Based Interface Based on Wake-Up Gesture." T. Starner, A. Wong, N. Patel, M. Johnson. January 2, 2018 (US9857965).
14. "Zoom and image capture based on features of interest." T. Starner and J. Weaver. Awarded December 26, 2017 (US9852506).
15. "Text-entry for a computing device." N. Patel and T. Starner. Awarded November 28, 2017 (US9830071).
16. "Creating Social Network Groups." T. Starner, C. Wren, M. Johnson. Awarded November 7, 2017 (US9811535).
17. "Interactive Cord with Integrated Light Sources." T. Starner, K. Sawyer, G. Priest-Dorman. Awarded October 31, 2017 (US9807852).
18. "Dynamic Capture of Experience Data." M. Balez, N. Patel, and T. Starner. Awarded October 17, 2017 (US9794527).
19. "Methods and systems for calibrating a device." H. Raffle, T. Starner, M. Balez, M. Johnson, Y. Zhao, B. Wu, D. Sparks, and N. Patel. Awarded August 29, 2017 (US9746915).
20. "Wearable computing device authentication using bone conduction." A. Wong, T. Starner, and J. Weaver. Awarded August 22, 2017 (US9740842).
21. "Methods and Systems for a Virtual Input Device." T. Starner, L. Chi, L. Prada-Gomez. Awarded August 8, 2017 (US9727174).
22. "Eye Reflection Image Analysis." T. Starner, H. Raffle, Y. Zhao. Awarded June 20, 2017 (US9684374).
23. "Magnetometer-Based Gesture Sensing With A Wearable Device." T. Starner, M. Johnson, and E. Keyes. Awarded May 23, 2017 (US9658692).
24. "Use of comparative sensor data to determine orientation of head relative to body." T. Starner and M. Johnson. Awarded January 31, 2017 (US9557152).
25. "Object outlining to initiate a visual search." T. Starner and I. Essa. Awarded January 3, 2017 (US9536354).
26. "Zoom and image capture based on features of interest." T. Starner and J. Weaver. Awarded October 11, 2016 (US9466112).
27. "Point-of-view object selection." T. Starner. Awarded August 30, 2016 (US9429990).
28. "Methods and systems for receiving input controls." T. Starner, B. Wu, and M. Johnson. Awarded August 16, 2016 (US9418617).
29. "Using Visual Layers to Aid in Initiating a Visual Search." T. Starner and I. Essa. Awarded August 2, 2016 (US9405977).
30. "Touch-based text entry using hidden Markov modeling." T. Starner, N. Patel, and S. Zhai. Awarded July 5, 2016 (US9383919).

31. "Information processing on a head-mountable device." J. Weaver, T. Starner, C. Biffle, and E. Keyes. Awarded May 31, 2016 (US9354445).
32. "Sensor for measuring tilt angle based on electronic textile and method thereof." H. Lee, H. Shin, T. Starner, S. Gilliland, and C. Zeagler. Awarded April 19, 2016 (US9316481).
33. "Visual completion." T. Starner and I. Essa. Awarded March 29, 2016 (US9298256).
34. "Text-entry for a computing device." N. Patel and T. Starner. Awarded March 22, 2016 (US9292082).
35. "Input detection." S. D'Amico and T. Starner. Awarded March 1, 2016 (US9274599).
36. "Wearable computing device authentication using bone conduction." A. Wong, T. Starner, and J. Weaver. Awarded March 1, 2016 (US9277334).
37. "Use of comparative sensor data to determine orientation of head relative to body." T. Starner and M. Johnson. Awarded February 23, 2016 (US9268136).
38. "Expectation maximization to determine position of ambient glints." T. Starner. Awarded February 23, 2016 (US9268024).
39. "Input detection." T. Starner, B. Wu, and Y. Zhao. Awarded February 23, 2016 (US9265415).
40. "Device control utilizing optical flow." T. Starner and M. Johnson. Awarded January 5, 2016 (US9230171).
41. "Object outlining to initiate a visual search." T. Starner and I. Essa. Awarded January 5, 2016 (US9230171).
42. "Ambient light optics for head mounted display." B. Kress and T. Starner. Awarded December 29, 2015 (US9223152).
43. "Cascading optics in optical combiners of head mounted displays." B. Kress and T. Starner. Awarded December 29, 2015 (US9223139).
44. "Automatic Adjustment of Scaled Display Within Eye-Box to Account for Movement of an HMD." T. Starner, A. Wong, Y. Zhao, C. Wang, A. Gupta, L. Chi. Awarded December 15, 2015 (US9213185).
45. "Input detection." B. Wu, Y. Zhao, H. Neven, H. Raffle, T. Starner. Awarded December 8, 2015 (US9207760).
46. "Position estimation based rotation of switched off light source." B. Wu, T. Starner, H. Raffle, Y. Zhao, E. Keyes. Awarded December 1, 2015 (US9202280).
47. "Zoom and image capture based on features of interest." T. Starner and J. Weaver. Awarded November 24, 2015 (US9197864).
48. "Method and system for dynamically defining scroll-wheel functionality on a touchpad." N. Patel and T. Starner. Awarded November 3, 2015 (US9176652).
49. "Wearable computing device with gesture recognition." M. Johnson, M. Balez, D. Sparks, T. Starner. Awarded October 20, 2015 (US9164588).
50. "Magnetometer-based gesture sensing with a wearable device." E. Keyes, M. Johnson, and T. Starner. Awarded September 22, 2015 (US9141194).
51. "Using visual layers to aid in initiating a visual search." T. Starner and I. Essa. Awarded June 30, 2015 (US9069382).

52. "Methods and systems for a virtual input device." T. Starner, L. Chi, L. Prada-Gomez. Awarded June 30, 2015 (US9069164).
53. "Text input on touch sensitive interface." N. Patel and T. Starner. Awarded June 23, 2015 (US9064436).
54. "Object occlusion to initiate a visual search." T. Starner, I. Essa, H. Raffle, and D. Aminzade. Awarded June 9, 2015 (US9052804).
55. "Matching of gesture keyboard strokes with predefined stroke templates." N. Patel and T. Starner. Awarded April 28, 2015 (US9021379).
56. "User-experience customization." M. Johnson, J. Weaver, and T. Starner. Awarded March 31, 2015 (US8994613).
57. "Multiple graphical keyboards for continuous gesture input" T. Starner, N. Patel, and S. Zhai. Awarded March 31, 2015 (US8997013).
58. "HMD image source as dual-purpose projector/near-eye display" T. Starner and C. Wang. Awarded March 17, 2015 (US8982471).
59. "Visual completion." T. Starner and I. Essa. Awarded March 3, 2015 (US8971571).
60. "Device authentication." T. Starner, M. Johnson, A. Costa. Awarded February 24, 2015 (US8963806).
61. "Input method and system based on ambient glints." T. Starner. Awarded February 17, 2015 (US8958599).
62. "Method and system for input detection using structured light projection." E. Keyes, J. Weaver, H. Raffle, T. Starner. Awarded February 17, 2015 (US8955973).
63. "Determining correlated movements associated with movements caused by driving a vehicle." J. Weaver and T. Starner. Awarded February 10, 2015 (US8952869).
64. "Position estimation using predetermined patterns of light sources." B. Wu, Y. Zhao, T. Starner, H. Raffle, E. Keyes. Awarded January 27, 2015 (US8942419).
65. "Image capture." T. Starner. Awarded January 27, 2015 (US8941561).
66. "Content Annotation." A. Kauffmann, C. Biffle, L. Chi, L. Gomez, and T. Starner. Awarded December 30, 2014 (US8922481).
67. "Input methods and systems for eye positioning using plural glints." T. Starner, Y. Zhao, J. Weaver, H. Raffle, E. Keyes, B. Wu. Awarded December 16, 2014 (US8913789).
68. "Systems and methods for position estimation." B. Wu, Y. Zhao, T. Starner, H. Raffle. Awarded November 4, 2014 (US8878749).
69. "Chord authentication via a multi-touch interface." B. Rhodes, M. Johnson, S. Thrun, T. Starner. Awarded October 28, 2014 (US8873147).
70. "Assisted speech input." N. Patel, M. Balez, T. Starner. Awarded October 7, 2014 (US8856006).
71. "Methods and apparatus for electronic communication filtering." B. Rhodes, T. Starner, C. Biffle. Awarded September 16, 2014 (US8838708).
72. "Chording sheath for computing device." G. Priest-Dorman and T. Starner. Awarded August 12, 2014 (US8803831).

73. "Textured linear trackpad." T. Starner, M. Olsson, M. Martin, and N. Patel. Awarded July 1, 2014 (US8766940).
74. "Gesture completion path display for gesture-based keyboards." T. Starner, N. Patel, and S. Zhai. Awarded April 15, 2014 (US8701050).
75. "Determining whether a wearable device is in use." M. Braun, R. Geiss, H. Ho, T. Starner, G. Taubman. Awarded April 1, 2014 (US8686924).
76. "Wireless directional identification and verification using wearable electronic devices." H. Ho, B. Amirparviz, R. Prada, T. Starner. Awarded April 30, 2013 (US8430310).
77. "Nose bridge sensor." M. Braun, R. Geiss, H. Ho, T. Starner, and G. Taubman. Awarded February 26, 2013 (US8384617).
78. "Efficient selection of characters and commands based on movement-inputs at a user-interface" N. Patel, T. Starner. Awarded November 20, 2012 (US8316319).
79. "Methods and systems for a virtual input device." T. Starner, L. Chi, L. Prada-Gomez. Awarded July 24, 2012 (US8228315).
80. "Systems and methods for correction of text from different input types, sources, and contexts." N. Patel, T. Starner, and J. Weaver. Awarded June 26, 2012 (US8209183).
81. "Point-of-view object selection." T. Starner. Awarded June 19, 2012 (US8203605).
82. "Systems and methods for controlling a cursor on a display using a trackpad input device." M. Braun, R. Geiss, H. Ho, T. Starner, and G. Taubman. Awarded June 5, 2012 (US8194036).
83. "Wireless directional identification and subsequent communication between wearable electronic devices." H. Ho, B. Amirparviz, L. Prada-Gomez, and T. Starner. Awarded May 22, 2012 (US8184983).
84. "Nose bridge sensor." M. Braun, R. Geiss, H. Ho, T. Starner, and G. Taubman. Awarded May 22, 2012 (US8184067).
85. "Magnetic mount eyeglasses display system." T. Starner and D. Ashbrook. Awarded May 23, 2006 (US7048370).
86. "Method and System for Data Transmission Between Wearable Devices or From Wearable Devices to Portal." A. Lightman, A. Pentland, T. Starner, J. Pair, K. Russell, B. Jordan, and R. Hoffman. Awarded June 29, 2004 (US6757719).
87. "Method and Apparatus for Automated, Context-Dependent Retrieval of Information." B. Rhodes, T. Starner, P. Maes, and A. Pentland. Awarded May 22, 2001 (US6236768).
88. "Method and System for Facilitating Wireless, Full-Body, Real-Time User Interaction with a Digitally Represented Visual Environment." P. Maes, B. Blumberg, T. Darrell, T. Starner, M. Johnson, K. Russell, and A. Pentland. Awarded October 8, 1996 (US5563988).

More than 15 US utility patents pending. Foreign patent filings on these patent families excluded for clarity.

D. Defensive Publications

1. "Self-managed Speech Therapy." D. Kanevsky, S. Savla, T. Starner. August 2018.
2. "Glass Covert Panic Button." T. Starner and M. Johnson. June 2018.
3. "Calibration-Free Estimation of User-Specific Bending of a Head-Mountable Device." T. Starner and E. Davami. June 2017.

All defensive publications were executed for Google.

V. OTHER CONTRIBUTIONS

A. Seminar Presentations (Invited Talks at Meetings and Symposia)

1. BBN, Speech Systems. "Eigenfaces." Cambridge, MA, August 1992.
2. CSIRO. "On-line Cursive Handwriting Recognition Using Speech Recognition Methods." Sydney, Australia, 1994.
3. IBM T J Watson Laboratory. "Augmenting Humans." Gossining, NY, September 1994.
4. Boston University, ACM chapter. "Wearable Computing." Boston, MA, March 1995.
5. Motorola, New Enterprises. "Wearable Computing." Schaumberg, IL, March 1995.
6. BBN Speaker Series. "Wearable Computing." Cambridge, MA, April 1995.
7. Wright Patterson Air Force Base, Crew Systems Directorate. "Face Recognition, Augmented Realities, and Wearable Computing." Dayton, OH, October 1995.
8. CPSI (now Xybernaut) Wearable Computing Workshop. "Consumer Applications of Wearable Computing." Invited presentation. Fairfax, VA, October 1995.
9. Sandia National Laboratories. "Wearable Computing." Albuquerque, NM, November 1995.
10. Carnegie Mellon University. "A Wearable Computing Approach to Intellectual Augmentation Through User Modeling and Prediction." Pittsburgh, PA, January 1996.
11. IBM Almaden Research Laboratory. "MIT Media Lab Research in Wearable Computing." San Jose, CA, April 1996.
12. Boston Computer Society, VR group. "Augmented Reality." Cambridge, MA, April 1996.
13. DARPA Energy Harvesting Workshop. "Human Powered Wearable Computing." Invited presentation. La Jolla, CA, July 1996.
14. MIT Entrepreneur's Club. "The Emerging Market for Portable Consumer Electronics." Cambridge, MA, September 1996.
15. Mitsubishi Electric Research Laboratory. "Wearable Computing." Cambridge, MA, October 1996.
16. Georgia Institute of Technology. "A Wearable Computing Approach to Intellectual Augmentation Through User Modeling and Prediction." Atlanta, GA, December 1996.
17. Fedex Workshop on Wearable Computing. "Living with Wearables." Panel member. Memphis, TN, January 1997.

18. Cyberposium, Harvard Business School (annual conference). "The Emerging Market for Portable Consumer Electronics." Cambridge, MA, February 1997.
19. University of Rochester computer science seminar. "Research Issues in Wearable Computing." Rochester, NY, February 1997.
20. CHI Wearables Workshop. "Wearable Computing Augmented Realities." Plenary speaker. Atlanta, GA, March 1997.
21. Greater New Hampshire Linux Group. "Wearable Computing for the Hobbyist." Nashua, NH, May 1997.
22. Boston Computer Society, Linux Group. "Wearable Computing and the Operating System Challenge." Cambridge, MA, July 1997.
23. Digital, Western Research Laboratory. "Wearable Computing, Augmented Memory, and Augmented Reality." Palo Alto, CA, September 1997.
24. IBM T J Watson Laboratory. "Wearable Computing and Contextual Awareness." Yorktown Heights, NY, May 1998.
25. Identity, Formation, Dignity (conference). "What Is the Identity of a Cyborg?" Panel speaker. Sponsored by the Boston Theological Institute (BTI), MIT Artificial Intelligence Laboratory, and the Center for Faith and Science Exchange (FASE). Cambridge, MA, May, 1998.
26. IEEE ISWC (annual conference). "Privacy, Wearable Computers, and Recording Technology." Panel speaker. Pittsburgh, PA, October 1998.
27. CHI-Atlanta. "Everyday-use Wearable Computing." Atlanta, GA, July 1999.
28. O'Reilly Open Source Software Conference (annual). "Linux in Wearable Computing Research." Invited presentation. Monterey, CA, July, 1999.
29. ACM Mobicom (annual conference). "Wearable Computing." Panel speaker. Seattle, WA, August 1999.
30. Atlanta Linux Showcase (annual conference). "Linux in Wearable Computing Research." Invited presentation. Atlanta, GA, October, 1999.
31. Spelman University. "Contextual Awareness Using Wearable Computing." Atlanta, GA, November 1999.
32. TTVanguard: The New Geography of Business. "Challenges of Wearable Computing and Contextual Awareness." Invited presentation. Amsterdam, The Netherlands, July 19, 2000.
33. Linux Business Expo (annual conference). "Embedded Linux." Panelist. Atlanta, GA, September 2000.
34. MITRE. "Wearable Computing and Contextual Awareness." Boston, MA, February 2001.
35. Viant. "Commercial Markets for Wearable Computing." Luminaries on the Lips seminar. Boston, MA, March 2001.
36. MIT Club Atlanta. "Challenges of Wearable Computing." Atlanta, GA, March 2001.
37. BBN. "Challenges of Wearable Computing." Cambridge, MA, May 2001.
38. Southeast Regional Internet Society (SERIS). "Businesses in Wearable Computing." Atlanta, GA, May 2001.

39. Georgia State University eCommerce Institute's Global eManagement (GEM) program. "Businesses in Wearable Computing." Atlanta, GA, May 2001.
40. Ubicomp: Workshop on Perception in Ubiquitous Computing. "Perception in Wearable Computing." Invited presentation. Atlanta, GA, September 2001.
41. Visteon. "Mobile Gesture Recognition." Dearborn, MI, June 2001.
42. Tech-U-Wear (conference). "Living on the Bleeding Edge: Lessons (not) Learned." New York City, New York Oct. 31, 2001.
43. Osaka Electro-Communication University 40th Anniversary Commemorative International Symposium. "Wearable Computers as Intelligent Agents." Invited presentation and paper. Osaka, Japan. November 2001.
44. First CREST Workshop on Advanced Computing and Communicating Techniques for Wearable Information Playing. "Wearable Computers as Intelligent Agents." Invited presentation and paper, Nara Institute of Science and Technology (NAIST). 200 attendees. Nara, Japan. March
45. IBM Zurich. "Wearable Computers as Intelligent Agents." Zurich, Switzerland, September 2002.
46. Quidnunc. "Wearable Computers in Financial Markets," London, United Kingdom, December 2002.
47. Pervasive Computing (annual conference). "Pervasive Computing Reality or Myth." Panel member. Ft. Worth, Texas. March 2003.
48. International Symposium on Modern Computing: in celebration of John Vincent Atanasoff's 100th birthday. "Wearable Computers: the Next Cusp in Computing?" 200 attendees. Ames, Iowa. October 2003.
49. First International Workshop on Ubiquitous Systems for Supporting Social Interaction and Face-to-Face Communication in Public Spaces. "Using Social Conversation to Control Wearable Interfaces." Seattle, WA, October 2003.
50. New Jersey Institute of Technology seminar. "Augmenting Face to Face Conversation with Wearable Computing." Newark, New Jersey. April 2004.
51. Samsung DM. "Wearable Computing Today and Tomorrow." Suwon, South Korea. May 2004.
52. Samsung Advanced Institute of Technology (research lab). "Ubiquitous Mobile Interfaces." Suwon, South Korea. May 2004.
53. KAIST (university). "Applying Speech Technology to Mobile Gesture Recognition." Daejeon, South Korea. May 2004.
54. ETRI (research lab). "Wearable Computing Today and Tomorrow." Daejeon, South Korea. May 2004.
55. Georgia Tech BACKUP event for alumni. "Mobile Interfaces Using Wearable Computing." Atlanta, GA. October 2004.
56. Xerox PARC Computer Science Laboratory Colloquium. "Interfaces for Augmenting Face-to-Face Conversation." Palo Alto, CA. March 2005.
57. Stanford Human-Computer Interaction Seminar. "Interfaces for Augmenting Face-to-Face Conversation Using Wearable Computers." Stanford, CA. April 2005.

58. University of California, Irvine HCI Seminar. "Interfaces for Augmenting Face-to-Face Conversation Using Wearable Computers." Irvine, CA. April 2005.
59. CMU HCII Seminar Series. "Interfaces for Augmenting Face-to-Face Conversation Using Wearable Computers." Pittsburgh, PA. April 2005.
60. Georgia Tech Library Lecture Series (Tuesday Talks). "Face to Face Discussion with Wearable Computers." Atlanta, GA. April 2005
61. Stanford Computer Forum Mobile Interaction Workshop. "Interfaces for Augmenting Face-to-Face Conversation Using Wearable Computers." Stanford, CA. May 2005.
62. Human Systems Integration Symposium (HSIS). "Man-Computer Symbiosis: Computing in Everyday Life." Panel presentation on HSIS in 2020. Washington, DC. June, 2005.
63. Rehabilitation Engineering and Assistive Technology Society of North America annual conference (RESNA). "Using Mobile Wireless Technology in Rehabilitation and Community Re-integration- Critical Considerations." Panel presentation on mobile device trends and possibilities. Atlanta, GA. June, 2005.
64. SIGGRAPH. "Extreme Fashion." Panel presentation on wearable computing and fashion. Los Angeles, CA. August, 2005.
65. Chengdu Science and Technology University. "Wearable Computers: New Interface Possibilities." Chengdu, China. September, 2005.
66. Georgia Tech Homecoming lecture. "Interfaces for Augmenting Face-to-Face Conversation Using Wearable Computers." Atlanta, GA. October, 2005.
67. Georgia State University Ubiquitous Computing class. "Wearable Computing: Computing for developing regions, approaches for artificial intelligence, and communication aids." Atlanta, GA. February, 2006.
68. Georgia Tech Global Executive MBA class. "The Marching Cello: on-the-go vs. mobile computing." Atlanta, GA. October, 2006.
69. Vassar College Asprey Lecture. "Toward Assistive Technology for the Deaf." Asprey Lecture, Poughkeepsie, NY, October 2007.
70. Associate for Computing Machinery Georgia Tech chapter talk. "Emerging Technology for the Deaf." Atlanta, GA, October 2007.
71. University of Bremen. "The Marching Cello: on-the-go vs. mobile computing." Bremen, Germany, December, 2007.
72. University of Houston Computer Science seminar. "Towards Assistive Technology for the Deaf." Houston, TX, January 2008.
73. Google Tech Talk. "Reading Your Mind: Interfaces for Wearable Computing." Menlo Park, CA, March 2008. Over 8000 views on YouTube that year.
74. Alcatel-Lucent 4G Forum closing session. "The Six Next Big Things." Las Vegas, NV, March 2008.
75. Berry College School of Mathematics and Natural Sciences Annual Research Colloquium. "Reading Your Mind: Interfaces for Wearable Computing." Rome, GA, April 2008
76. Tata Innovations Forum. "The Marching Cello: Why Mobile Computing is not on-the-go computing." Menlo Park, CA, March 2008.

77. ICE Wearable Workshop. "The Next Six Big Things in Mobility." Lisbon, Portugal, June 2008.
78. International Symposium on Ubiquitous Virtual Reality. "Reading Your Mind: Interfaces for Wearable Computing." Gwanju, South Korea, July 2008.
79. International Symposium on Wearable Computers panel. "Future Challenges to Wearable Computing." Pittsburgh, PA. September, 2008,
80. Wearable Computer Symposium. "Reading Your Mind: Interfaces for Wearable Computing." Kobe, Japan, November 2008.
81. Workshop on Energy Autonomous Systems. "Power to the People." Paris, France, December 2008.
82. Nature in Design talk series. "The Human Aspect of Mobile Interfaces" with Clint Zeagler. Atlanta, 2009.
83. WearIT@Work workshop. "The Next 7 Big Issues in Wearable Computing." Bremen, Germany, April 2009.
84. Computing@Margins Symposium panel talk. "Assistive Technology Through Sign Language." Atlanta, GA, May 2009.
85. Universitaet Bremen Logistics Group. "Wearable Computing: A Symbiotic Approach to Artificial Intelligence." Bremen, Germany, May 2009.
86. TTI/Vanguard. "Computational Interfaces for Mobile Environments." Salt Lake City, December 2009. Based on feedback from members, **talk received the highest scores of the 18 invited speakers for all fields (quality, relevance, and applicability).**
87. Georgia State University ACM chapter. "Wearable Computing." Atlanta, GA. April 2010.
88. Apple. "Mobile Interfaces for the Small." Cupertino, CA. June 2010.
89. Apple. "Mobile Interfaces for the Mad Scientist." Cupertino, CA. June 2010.
90. Google. "Gesture and Tactile Interfaces: Applications in Mobile Computing and American Sign Language." Mountain View, CA. June 2010.
91. Atlantic Corridor STEM Conference. "Gesture and Tactile Interfaces: Applications in Wearable Computing." Tullamore, Ireland. March 2011.
92. Ericsson. "Wearable Computing: The Next Generation of 'Borg.'" Athlone, Ireland. March 2011.
93. Athlone Institute of Technology (AIT). "Toward Assistive Technologies for Deaf Education." Athlone, Ireland. March 2011.
94. Stanford Human-Computer Interaction Seminar. "Wearable Computing: Assimilating The Next Generation of 'Borg.'" Palo Alto, CA. April 2011.
95. Qualcomm. "Context Discovery." San Diego, CA. September 2011.
96. Georgia Tech Neuro@Tech class. "Magic Hands: Using Gesture for Learning, Communication, and Rehabilitation." Atlanta, GA. March 2012.
97. National Research Council Committee for Assessing Foreign Technology Development in Human Performance Modification. "Augmenting Human Memory, Reality, Senses, and Communication." Irvine, CA. March 2012.

98. TEDxGeorgiaTech. "Wearable Computers for Passive Learning and Rehabilitation." Atlanta, GA. April 2012.
99. CVPR Workshop on Gesture Recognition. "Gesture Recognition and Human Computer Interaction (15 tips in 30 minutes)." Providence, RI. June 2012.
100. Google Faculty Summit. "Why Wearable Computing." Mountain View, CA. July 2012.
101. Howard University. "Wearable Computing: Through the Looking Glass." Washington DC. August 2012.
102. Georgia Tech Mini MakerFaire. GVU rapid prototyping laboratory demonstrations. October 2012.
103. GVU 20th Anniversary. The Future of Interaction Technology and Research panel. Atlanta, GA. October 2012.
104. NASA Ames. "Passive Haptic Learning and Rehabilitation (and other surprising uses for wearable computers)." Mountain View, CA. November 2012.
105. Georgia Tech Neuroscience Club. "Passive Haptic Learning and Rehabilitation (and other surprising uses for wearable computers)." Atlanta, GA. November 2012.
106. Computation + Journalism Symposium 2013, Closing Panel: The Future of "X" (Moderated by Matt Boggie) Atlanta, GA. February 2013.
107. Georgia Governor's Innovation Forum (at the capitol building), "Ready to Innovate." Atlanta, GA. March 2013.
108. Georgia Tech Neuro@Tech class. "Wearable Computing: Through the Looking Glass." Atlanta, GA. April 2013.
109. Google I/O. "Fireside Chat with Research at Google." San Francisco, CA. May 2013. One of the highest ranked sessions at the conference.
110. Coolidge Corner Theater Science on Screen. "Wearable Computing: Reducing the Time between Intention and Action." Boston, MA. May 2013
111. MIT Media Laboratory. "Wearable Computing: Reducing the Time between Intention and Action." Cambridge, MA. May 2013
112. Google Tech Talk. "Glass Academic Program Award Winners" with Michael Rennaker. Mountain View, CA. June 2013.
113. International Symposium on Technology and Society (ISTAS) invited talk. "Lowering Barriers with Google Glass" Toronto, Canada. June 2013.
114. Silicon Valley Innovation Summit. "Move Over Smartphones and Tablets - Here Come Wearables and Drivables" panel. Mountain View, CA. July 2013.
115. Data Protection Administrators yearly meeting. "Lowering Barriers with Google Glass." Berlin, Germany. September 2013.
116. Google Zurich TGIF Tech. "Lowering Barriers with Google Glass." Zurich, Switzerland. September 2013.
117. UNESCO. "Lowering Barriers with Google Glass." Paris, France. September 2013.
118. Google PhD Fellowship Meeting. "Lowering Barriers with Google Glass." Zurich, Switzerland. September 2013.

119. London School of Economics. "Symbiotic AI: an approach to artificial intelligence through first-person sensing." London, England, September 2013.
120. Atlanta CEO Council. "Wearable Computers for Passive Learning and Rehabilitation." Atlanta, GA. September 2013.
121. Georgia Tech Center for Educational Enhancement. "Panel Discussion with Donald Norman, author of *Living with Complexity*." Atlanta, GA. October 2013.
122. Georgia Tech People and Technology Forum. "Wearables in a Post Mobile World" panel. Atlanta, GA. October 2013.
123. Symposium on Mobile Graphics and Interactive Applications. Wearable Computing panel. Hong Kong. November 2013.
124. Churchill Club. "Wearable Technology: What's Next?" panel. San Jose, CA. February 2014.
125. ID2022 Studio 2. "Lowering Barriers with Google Glass." Atlanta, GA. March 2014.
126. Georgia Tech GVU Brown Bag. "Wearable Computing: Through the Looking Glass." Atlanta, GA. March 2014.
127. MIT and the Digital Economy: The Second Machine Age Conference. "Automation and the New Mind-Machine Boundary panel" (with Carl Bass, CEO of Autodesk and Zoe Barid, President of the Markle Foundation). New York City, NY. April 2014.
128. ID3032 Health Design Studio. "Lowering Barriers with Google Glass." Atlanta, GA. April 2014.
129. Exploratorium After Dark. "Wearable Computing: Through the Looking Glass." San Francisco, CA. April 2014.
130. TEDxEmory. "Wearable Computers for Passive Learning and Rehabilitation." Atlanta, GA. April 2014.
131. MIT Technology Review Digital Summit, "Wearable Computing: Through the Looking Glass" talk and interview. San Francisco, CA. May 2014.
132. Stanford Wearable Computing guest lecture. "The Unexpected Side of Wearable Computing." Palo Alto, CA. May 2014.
133. HackGT. "Symbiotic AI." Atlanta, GA. September 2014.
134. TEDxPeachtree. "Can learning the piano rehab partial spinal cord injury patients?" Atlanta, GA. October 2014.
135. National Academy of Sciences, Continuing Innovation in Information Technology. "History of Wearables." Washington DC. March 2015.
136. Computer History Museum. "On You: A Story of Wearable Computing" opening panel. Mountain View, CA. June 2015.
137. Computer History Museum. "Wearable Computing: Not Just for Humans Anymore!" Industry "rock star" presentation for Broadcom Presents: Design_Code_Build day-long education program for 100 students grades 6-8. Mountain View, CA. July 2015.
138. Computer History Museum. "If the Computer Fits, Wear it!" Soundbytes speaker series. Panel session with Greg Priest-Dorman and Dan Siewiorek, moderated by Marc Weber. Mountain View, CA. August 2015.

139. ISWC Wear and Tear workshop. “A History of Wearable Hardware Challenges.” Invited kick-off talk. Osaka, Japan. September 2015.
140. Georgia Tech Wearable Computing Center Forum. “Wearable Computing: Now and the Near Future.” Panel moderator. Atlanta, GA. October 2015.
141. Higgins School of Humanities Fall Dialogue Symposium. “An Extension of Self: The Present and Future of Wearable Computing.” Worcester, MA. October 2015.
142. Dagstuhl Seminar on Eyewear Computing Augmenting the Human with Head-mounted Wearable Assistants. “Head-Worn Displays (HWDs) for Everyday Use.” Schloss Dagstuhl, Germany. January 2016.
143. Museum of Design Atlanta industry panel moderator. “On You: Wearing Technology” Atlanta, GA. August 2016.
144. Georgia Tech Physiology Brown Bag Seminar. “Using Wearable Computers for Passive Haptic Learning and Rehabilitation.” Atlanta, GA. January 2017.
145. Dragoncon. “Toys that are changing the future of gaming.” Panel with Jose Zagal, Maribeth Gandy, and Laura Levy. Atlanta, GA. September 2017.
146. Augmented World Expo (AWE). “Symbiotic AI: Using wearable devices to teach computers how to live in a human world.” Munich, Germany. October 2017.
147. Computing Community Consortium’s Computing Research: Addressing National Priorities and Societal Needs. “Augmenting Intellect through Wearables and Artificial Intelligence.” Washington, DC. October 2017. (Computing Research Association’s CCC articulates compelling research visions and aligns those visions with pressing national and global challenges. It communicates the importance of those visions to policymakers, government and industry stakeholders, the public, and the research community itself.)
148. Technical College System of Georgia Leadership Conference. “Wearables and AI as Assistive Technology.” Savannah, GA. November 2017.
149. SPIE Photonics West. “AR, VR and MR: Yesterday, Today and Tomorrow” panel. San Francisco, CA. January 2018.
150. Gallaudet Google Summit. “Towards ASL Recognition and Verification.” Washington, DC. March 2018.
151. Stackfolio Chat on the Futon. “Passive Haptic Learning and Rehabilitation.” Atlanta, GA. March 2018.
152. University of Waterloo. “Wearable Computing: Gestural Interfaces and Passive Haptic Learning.” Waterloo, Ontario, Canada. April 2018
153. Thalmic. “Do On-the-go Users Want an Immersive AR Display?” Kitchener, Ontario, Canada. April 2018.
154. IPaT Industry Day. “Passive Haptic Learning and Rehabilitation.” Atlanta, GA. April 2018.
155. Startupfest. “Augmenting Human Communication” lightning keynote with Dimitri Kavensky and Sagar Savla. Montreal, Canada. July 2018.
156. Startupfest. “The Future of Communication” with Dimitri Kavensky and Sagar Savla. Montreal, Canada. July 2018.

157. OSA Frontiers in Optics. “User-Centered Design of Head Worn Displays.” Washington DC. September 2018.
158. Living Maths Interview with Thad Starner. livingmaths.com. Cape Town, South Africa. October 2018.
159. Augmented, Virtual, and Mixed Reality Conference, SPIE Photonics West. “A User-Centered Approach to On-the-go HWD Design.” San Francisco, CA. February 2019.
160. Augmented, Virtual, and Mixed Reality Conference, SPIE Photonics West. “The Pioneers” panel. San Francisco, CA. February 2019.