Michael Novitzky
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SKILLS Autonomous Multi-Collaborative Behaviors, Humanoid Motion Planning**,** Computer Vision, C\C++, OpenGL, OpenCV, html, MS Windows, Mac OS X, Ubuntu Linux, svn, git, MOOS-IvP, ROS

EDUCATION

Georgia Institute of Technology
Ph.D in Robotics (School of Computer Science) Aug. 2009-May 2015
Emphasis: Autonomy, Intelligence, Perception
Thesis: "Robot Cooperation in Poor Communication Environments through Behavior Recognition"

Masters of Science in Electrical and Computer Engineering Aug. 2011-2014
Specialization: Controls and Applied Probability

Masters of Science in Computer Science May 2009
Specialization: Robotics and Intelligent Machines
GPA: 3.83/4.0
Masters Project: Communication and Motion Planning for Nao Standard Platform League RoboCup 2008 Advisors: Dr. Balch, GT and Dr. Veloso, CMU

The University of Arkansas Little Rock Jan. 2005-2006
Computer Science GPA: 3.94/4.0

The Colorado College, Colorado Springs, CO May 2003
Bachelor of Arts, Major: Psychology, Thematic Minor: Russian
GPA: 3.63/4.0, Major GPA: 3.67

WORK

Georgia Tech Research Institute, Atlanta, GA Jan. 2014-Present
Robot Infrastructure for Pioneer and AR Drone
Support lab and field experiments and demos
PhD thesis – algorithm development and implementation

The Georgia Institute of Technology, Atlanta, GA Aug. – Dec 2013
Inferring Dominance and Relationships of Macaque Monkeys
Wrote programs for analysis, Wrote conference papers

Massachusetts Institute of Technology, Boston, MA May-Aug. 2013
Internship: Project Assistant
Assisted with deploying up to 5 Clearpath M100 and M200 robots for data gathering in COLREGs testing. Assisted with pParticleFilter application for an ongoing project.

Georgia Tech Research Institute, Atlanta, GA May 2009-May 2013
Yellowfin: Autonomous Man-Portable Underwater Vehicle
Full autonomy development on single-board computer and XMOS embedded processor

CUSTD: Collaborative Unmanned Systems Technology Demonstrator
Communication (OpenJAUS) and logic for heterogeneous team of UAVs (scale piper cubs) and UGV (GATech Sting vehicle)

PROJECTS

RoboCup 2008 Nao Standard Platform League
Communication and Motion Planning for the Nao humanoid robot as part of GTCMUnited'08 which placed 2nd.

Boxing Robot
Boxing Nao robots utilizing Jacobian based inverse kinematics, potential fields for obstacle avoidance, and Bezier curves for acceleration.

Automatic Color Gamut Calibration
The GretagMacbeth ColorChart localized in an image is used to adjust the colors to match sunlight.

Particle Filter Tracking
Tracking an object through camera and localizing it on a 2D map of the world.

SOCIETIES

Member Eta Kappa Nu (HKN)	Oct. 2012-Present
Member AUVSI	May 2011-Present
Member IEEE: RAS	Jan. 2011-Present
GaTech RoboGrads (Outreach Chair)	Aug. 2010-Present
RoboJackets	Aug. 2008-2009

LEADERSHIP/SERVICES

Founder RIM Intramural Soccer Team – RoboGrads FC	Oct. 2011-Present
FIRST Lego League: Judge	Jan. 2010-Present
Ro-Man Volunteer	August 2011
Peer Coaching-Freshman Advisor	Aug. 2007-May 2008
Robotics: Sciences and Systems- Volunteer	June 2007
RoboCup Volunteer	July 2007

PUBLICATIONS

PUBLISHED

M. Novitzky, T.R. Balch, and Lora Weiss. "Optimizing Robot Behavior for Improved Recognition by Teammates," International Symposium on Distributed Autonomous Robotic Systems (DARS), Daejeon, South Korea. November, 2014.

M. Novitzky, M. R. Benjamin, T.R. Collins, T.R. Balch, M.E. West, and Lora Weiss. "Behavior-based Communication for Cooperative Mine Clearing with an ASV," International Symposium on Distributed Autonomous Robotic Systems (DARS), Daejeon, South Korea. November, 2014.

M. Novitzky, C. Pippin, T.R. Collins, T.R. Balch, and M. E. West, "AUV Behavior Recognition using Behavior Histograms, HMMs, and CRFs," Journal ROBOTICA, Cambridge University Press. February 2014.

M. Novitzky, C. Pippin, T.R. Collins, T.R. Balch, and M.E. West, "Bio-Inspired Multi-Robot Communication through Behavior Recognition," IEEE International Conference on Robotics and Biomimetics (ROBIO), 2012.

M. Novitzky, C. Pippin, T.R. Collins, T.R. Balch, and M.E. West, "Conditional Random Fields for Behavior Recognition of Autonomous Underwater Vehicles," Distributed Autonomous Robotics Systems (DARS), 2012.

M. Novitzky, C. Pippin, T.R. Collins, T.R. Balch, and M.E. West, "Behavior Recognition of Autonomous Underwater Vehicles Using Forward-Looking Sonar," Distributed Autonomous

Robotics Systems (DARS), 2012.

Michael Novitzky, Charles Pippin, Tucker Balch, Thomas Collins, and Michael E. West. "Behavior Recognition of an AUV Using Forward-Looking Sonar. RSS Workshop on Marine Robotics. July 2011.

M. Novitzky, "Improvement of Multi-AUV Cooperation through Teammate Verification," Workshops at the Twenty-Fifth AAAI Conference on Artificial Intelligence, 2011.

H. Kim, A. Kogan, C. Dasgupta, M. Novitzky, and E.Y.L. Do, "Grocery Hunter: a fun game for children to combat obesity." Tangible, Embedded, and Embodied Interaction, 2011.

M.E. West, T.R. Collins, J.R. Bogle, A. Melim, and M. Novitzky "An Overview of Autonomous Underwater Vehicle Systems and Sensors at Georgia Tech." AUSI Sensors and Systems, November 2010.

West et al., "Design and Development of the YellowFin UUV for Homogenous Collaborative Missions." AUVSI Unmanned Systems, August 2010.

Charles Pippin, Gary Gray, Michael Matthews, Dave Price, Ai-Ping Hu, Warren Lee, Michael Novitzky, Paul Varnell, "The Design of an Air-Ground Research Platform for Cooperative Surveillance", GTRI Technical Report 112010, 2010.

PRESENTATIONS

"Bio-Inspired Multi-Robot Communication through Behavior Recognition," presented at MOOS-DAWG: MOOS Development and Applications Working Group, M.I.T. Cambridge, MA July, 2013.

"The Latest Developments of the Yellowfin 2.0 UUV," presented at MOOS-DAWG: MOOS Development and Applications Working Group, M.I.T. Cambridge, MA July, 2013.

"Yellowfin UUV" presented at MOOS-DAWG: MOOS Development and Applications Working Group, M.I.T. Cambridge, MA August, 2010.

REVIEWER FOR TECHNICAL JOURNALS AND PUBLISHERS

ROBOTICA Journal
Robotics and Autonomous Systems
The International Journal of Robotics Research
IEEE International Conference on Robotics and Automation
IEEE Transactions on Mechatronics
IEEE Transactions on Robotics
Distributed Autonomous Robotic Systems

PROPOSALS

Large Displacement UUV: Autonomy
Large Displacement UUV: Endurance

AWARDS AND RECOGNITION

Georgia Tech Research & Innovation Conference (GTRIC) Poster Competition Finalist '13 & '14
DARS 2012 Conference: Student Travel Grant
Top 5 GRA Finalist: GTRI Annual Distinguished Performance Award
CUSTD named GTRI's Top 5 Internal Research and Development (IRAD) project for 2011
2nd Place Nao Standard Platform League Robocup 2008

ATTENDED SPECIALTY SHORT SCHOOLS

Summer School on Cooperative Cognitive Control for Autonomous Underwater Vehicles (Co3-AUVs) 2010

GIVEN DEMONSTRATIONS AND TOURS

Humanoids 2013 –organized tours of robotics labs at GT for 100's of participants
U.S. Army Logistics
Ben Riley (OSD)
Washington Post
Georgia Tech Auto Show
Ro-Man 2011
Maire Geoghegan-Quinn EU Head of Science, Technology and Education
National Robotics Week 2010, 2011
Potential GTRI Customers
Atlanta's Mayor
TARDEC's Robotics Rodeo, Ft. Benning GA Oct. 12-15 2010

ROBOTIC PLATFORMS

Parrot AR Drone
Pioneer AT-3
Clearpath Robotics' Kingfisher ASV M100
Clearpath Robotics' Kingfisher ASV M200
Yellowfin – GTRI's Autonomous Underwater Vehicle
Sting Vehicle – GaTech's Autonomous Porsche Cayenne
Skybotix CoaX helicopter
Aldebaran Robotics Nao humanoid robot

ROBOTIC SIMULATORS

MOOS-IvP pMarineViewer
Matlab
Stage/Gazebo

RELEVANT GRADUATE COURSES

PERCEPTION
Computer Vision
3D Reconstruction
Pattern Recognition

AUTONOMY
Autonomous Control of Robotic Systems
Multi-Robot Systems

INTELLIGENCE
Introduction to Artificial Intelligence
Robot Intelligence – Planning in Action
Game Theory & Multi-Agent Systems
Probabilistic Graphical Models

CONTROLS
Linear Systems and Controls
Nonlinear Systems and Controls
Networked Control Systems
Optimal Controls

LANGUAGES Fluent Spanish speaking, Beginner Russian speaking