

+1 404 345 0515  
Atlanta, GA  
jiamingcui1997@gatech.edu  
<https://cc.gatech.edu/jcui75/>

# Jiaming Cui

## RESEARCH INTERESTS

My primary research interest is to bridge public health with clinical decisions. My research focus is at the intersection of public health, scientific modeling, and machine learning, and my main application is on clinical decision-making.

## EDUCATION

### Ph.D. in Computer Science

*Georgia Institute of Technology*

Aug 2019 - Jul 2024 (expected)

Advisor: B. Aditya Prakash

### B.S. in Information Engineering & B.S. in Finance

*Shanghai Jiao Tong University*

Sep 2015 - Jul 2019

Graduate with Honor

## EMPLOYMENT

### Graduate Research Assistant

*Georgia Institute of Technology*

Aug 2019 - present

## PUBLICATION

### Preprints

1. Jiaming Cui, Jack Heavey, Eili Y. Klein, Gregory R. Madden, Anil K. Vullikanti, B. Aditya Prakash. Combining Agent-based Models and Neural Networks to Identify Importation and New Acquisition Cases of Healthcare Associated Infections. (PNAS, under review)
2. Jiaming Cui, Arash Haddadan, A S M Ahsan-Ul Haque, Jilles Vreeken, Bijaya Adhikari, Anil Vullikanti, B. Aditya Prakash. Information Theoretic Model Selection for Accurately Estimating Unreported COVID-19 Infections. (Scientific Reports, under review)
3. Lingkai Kong, Wenhao Mu, Jiaming Cui, Yuchen Zhuang, B. Aditya Prakash, Bo Dai, Chao Zhang. DF<sup>2</sup>: Distribution-Free Decision-Focused Learning. (UAI 2024, under review)

### Conference and Journals

1. Jiaming Cui, Jack Heavey, Leo Lin, Eili Y. Klein, Gregory R. Madden, Costi D. Sifri, Bryan Lewis, Anil K. Vullikanti, B. Aditya Prakash. Modeling Relaxed Policies for Discontinuation of Methicillin Resistant Staphylococcus aureus Contact Precautions. ICHE 2024.
2. Vivek Anand\*, Jiaming Cui\*, Jack Heavey, Anil Vullikanti, B. Aditya Prakash. H<sup>2</sup>ABM: Heterogeneous Agent-based Model on Hypergraphs to Capture Group Interactions. SDM 2024 (Houston). **[best poster award]**
3. Jiaming Cui\*, Sungjun Cho\*, Methun Kamruzzaman, Matthew Bielskas, Anil Vullikanti, B. Aditya Prakash. Modeling Pathogen Transmission in Heterogeneous Networks: Spectral Characterization and Applications. Scientific Reports 2023.
4. Jiaming Cui, Jack Heavey, Leo Lin, Eili Y. Klein, Gregory R. Madden, Costi D. Sifri, Bryan Lewis, Anil K. Vullikanti, B. Aditya Prakash. Modeling Relaxed Policies for Discontinuation of Methicillin Resistant Staphylococcus aureus Contact Precautions. (poster). MIDAS 2023 (Atlanta).

5. Lingkai Kong, Jiaming Cui, Haotian Sun, Yuchen Zhuang, B. Aditya Prakash, Chao Zhang. Autoregressive Diffusion Model for Graph Generation. ICML 2023 (Hawaii).
6. Hankyu Jang, Andrew Fu, Jiaming Cui, Methun Kamruzzaman, B. Aditya Prakash, Anil Vullikanti, Bijaya Adhikari, Sriram Pemmaraju. Detecting Sources of Healthcare Associated Infections. AAAI 2023 (Washington DC).
7. Alexander Rodríguez, Jiaming Cui, Naren Ramakrishnan, Bijaya Adhikari and B. Aditya Prakash. EINNs: Epidemiologically-Informed Neural Networks. AAAI 2023 (Washington DC).
8. Jiaming Cui, Arash Haddadan, A S M Ahsan Ul Haque, Bijaya Adhikari, Anil Vullikanti and B. Aditya Prakash. Information Theoretic Model Selection for Accurately Estimating Unreported COVID-19 Infections (poster). MIDAS 2022 (Washington DC).
9. Lingkai Kong, Jiaming Cui, Yuchen Zhuang, Rui Feng, B. Aditya Prakash, Chao Zhang. End-to-end Stochastic Programming with Energy-based Model. NeurIPS 2022 (New Orleans).
10. Cramer, Estee Y., et al. [multiple co-authors, including Jiaming Cui] Evaluation of Individual and Ensemble Probabilistic Forecasts of COVID-19 Mortality in the United States. PNAS 2022.
11. Cramer, Estee Y., et al. [multiple co-authors, including Jiaming Cui] The United States covid-19 Forecast Hub Dataset. Scientific data 2022.
12. Jack Heavey, Jiaming Cui, Chen Chen, B. Aditya Prakash. Provable Sensor Sets for Epidemic Detection over Networks with Minimum Delay. AAAI 2022 (Vancouver BC).
13. Alexander Rodríguez, Anika Tabassum, Jiaming Cui, Jiajia Xie, Javen Ho, Pulak Agarwal, Bijaya Adhikari and B. Aditya Prakash. DeepCOVID: An Operational Deep Learning-driven Framework for Explainable Real-time COVID-19 Forecasting. IAAI 2021 (virtual).
14. Jiaming Cui, Huaying Wu, Luoyi Fu, Xiaoying Gan. De-anonymizing Bitcoin Networks: an IP Matching Method via Heuristic Approach: poster. ACM TURC 2019 (Chengdu).

## RESEARCH EXPERIENCE

### Graduate Research Assistant

Aug 2019-present

*Georgia Institute of Technology*

- Designed and implemented diverse machine learning methods to address pressing public health and clinical challenges.
- Processed and analyzed large clinical datasets of 120 million insurance records for over 6 million people in Virginia.
- Contributed to the CDC COVID-19 response strategy with forecasting reports, ranked top 5 among 90 groups.
- Published at top conferences and journals such as NeurIPS, ICML, AAAI and received multiple awards in machine learning competitions.
- Collaborating closely with domain specialists, including CDC officials, epidemiologists, computer scientists, and clinicians.

### Undergraduate Research Assistant

Mar 2017-Jul 2019

*Shanghai Jiao Tong University*

- Designed data mining algorithms to identify the most influential papers within specific research fields (funded by National Science Foundation of China (NSFC)).
- Processed and analyzed large datasets of academic network covering 222 million papers and 104 million authors using Python.
- Designed a website for data visualization, achieving 10k+ visits since 2019.

## TEACHING EXPERIENCE

### Teaching Assistant

*CSE 8803 Introduction to Urban Computing*

Jan 2023-May 2023

### Teaching Assistant

*CSE 8803 Data Science for Epidemiology*

Aug 2021-Dec 2021

## SERVICE

### Program Committee

- IEEE Big Data 2024
- ASONAM 2023, 2024
- KDD epiDAMIK 2022, 2023

### Reviewer

- IEEE AVSS 2024
- CVPR 2024
- KDD 2022, 2023
- IEEE Transactions on Knowledge and Data Engineering (TKDE)
- IEEE Intelligent Systems
- Data Mining and Knowledge Discovery (DAMI)
- PLOS Global Public Health

## AWARDS

### SDM 2024 Best Poster Award

Apr 2024

### SDM 2024 Travel Award (by IBM)

*Awarded \$1000*

Feb 2024

### COVID-19 Symptom Data Challenge (organized by Facebook & CMU)

*Ranked 1st out of 35 global teams*

Dec 2020

### C3AI COVID-19 Grand Challenge

*Ranked 2nd out of 777 participants from 43 countries*

Dec 2020

## TECHNIQUE SKILLS

### Programming

Python, R, C++, C, Java, Matlab, R

### Tools

PyTorch, TensorFlow, L<sup>A</sup>T<sub>E</sub>X, Git, CUDA

## RELEVANT COURSEWORK

- Algorithms, Data Structure, Computer Architecture, Operation Systems, Computer Networks, Discrete Mathematics, Information Theory, Network Security
- Digital Signal Processing, Wireless Communication and Mobile Networks, Electromagnetics, Hardware Description Language
- Machine Learning, Deep Learning, Data Mining, Optimization (linear and convex)
- Financial Engineering, Accounting, Investment, Corporate Finance, International Finance