
Cheng Jiang

CONTACT

2017 Palmer Commons
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EDUCATION

University of Michigan, Ann Arbor, MI

Ph.D., Computational Medicine and Bioinformatics

September 2021 - Present

Advisor: Dr. Todd Hollon

University of Michigan, Ann Arbor, MI

M.S.E., Computer Science and Engineering

May 2021

University of Michigan, Ann Arbor, MI

B.S.E. *with Honors*, Computer Science

May 2019

Summa Cum Laude, Minor in Physics

AWARDS

- **Outstanding Graduate Student Instructor Award** March 2022
University of Michigan Rackham Graduate School
- **Biomedical Informatics and Data Science Training Program (BIDS-TP) Fellowship** August 2021
University of Michigan
- **Graduate Research Fellowships Program (GRFP) Honorable Mention** March 2021
National Science Foundation
- **Donald R. Shepherd Graduate Fellowship** May 2019
University of Michigan Marching Band
- **Outstanding Research Award** March 2019
University of Michigan Electrical Engineering and Computer Science Department
- **James B. Angell Scholar** March 2017
University of Michigan
- **Dean's List** 2015 - 2019
University of Michigan College of Engineering
- **University Honors** 2015 - 2019
University of Michigan

PUBLICATIONS

(* denotes equal contribution)

- **Hierarchical discriminative learning improves visual representations of biomedical microscopy**
The IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2023 (accepted)
Cheng Jiang*, Xinhai Hou*, Akhil Kondepudi, . . . , Daniel A Orringer, Honglak Lee, Todd Hollon
- **AI-based molecular classification of diffuse gliomas using rapid, label-free optical imaging**
Nature Medicine, 2023 (in press)
Todd Hollon, Cheng Jiang, Asadur Chowdury, . . . , Honglak Lee, and Daniel Orringer

- **OpenSRH: optimizing brain tumor surgery using intraoperative stimulated Raman histology**
Conference on Neural Information Processing Systems (NeurIPS) Datasets and Benchmarks Track, 2022
Cheng Jiang*, Asadur Chowdury*, Xinhai Hou*, ..., Honglak Lee, and Todd C. Hollon
- **Rapid automated analysis of skull base tumor specimens using intraoperative optical imaging and artificial intelligence**
Neurosurgery 90 (6), 2022, **COVER**
Cheng Jiang, ..., Sandra Camelo-Piragua, Daniel A. Orringer, Honglak Lee, and Todd C. Hollon
- **Coupled matrix-matrix and coupled tensor-matrix completion methods for predicting drug–target interactions**
Briefings in Bioinformatics 22 (2), 2021
Maryam Bagherian, Renaid Kim, Cheng Jiang, Maureen A. Sartor, Harm Derksen, and Kayvan Najarian
- **Prediction of cardiac arrhythmia using deterministic probabilistic finite-state automata**
Biomedical Signal Processing and Control 63, 2021
Zhi Li, Harm Derksen, Jonathan Gryak, Cheng Jiang, ..., and Kayvan Najarian
- **Automated segmentation and severity analysis of subdural hematoma for patients with traumatic brain injuries**
Diagnostics 10 (10), 2020
Negar Farzaneh, Craig A. Williamson, Cheng Jiang, ..., Kayvan Najarian, and S.M.Reza Soroushmehr
- **Midline shift vs. mid-surface shift: correlation with outcome of traumatic brain injuries**
IEEE International Conference on Bioinformatics and Biomedicine (BIBM), 2019
Cheng Jiang, Jie Cao, Craig Williamson, ..., Kayvan Najarian, and S.M.Reza Soroushmehr.
- **Automated subdural hematoma segmentation for traumatic brain injured (TBI) patients**
International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), 2017
Negar Farzaneh, S.M.Reza Soroushmehr, Craig A. Williamson, Cheng Jiang, ..., and Kayvan Najarian

INDUSTRY

Apple, Seattle, WA (Remote due to COVID-19)

Machine Learning Research Intern, mentor: Dr. Aditya Sankar May 2021 – August 2021

- Conducted ML experiments for a human-centered regression task using RGBD images and data
- Engineered heuristics and integrated domain knowledge to improve model interpretability and robustness
- Visualized latent representations and input relevance to provide interpretability to deep learning models

Motional, Boston, MA (Remote due to COVID-19)

Research Intern, mentors: Drs. Elena Corina Grigore and Eric Wolff May 2020 – August 2020

- Conducted experiments to improve multimodal motion prediction for agents on the road by adding camera images and other attributes to CoverNet
- Created annotation pipeline and coordinated with vehicle operators to annotate image attributes in logs

General Motors, Warren, MI

Vehicle Engineering Intern May 2018 – August 2018

- Developed an autonomous vehicle behavior planner with lane keeping capability using a cognitive architecture, and assessed the feasibility to transform existing rule-based planners to use the architecture

TEACHING

ENGR 101 Introduction to Computers and Programming, University of Michigan, Ann Arbor, MI

Graduate Student Instructor (4 terms), course director: Dr. Laura Alford September 2019 – April 2021

- Led weekly labs to provide first-year engineering students hands-on coding experiences, and taught programming concepts in C++ and Matlab

- Engaged with students by organizing demo sessions and supported them in office hours and online forum
- Redesigned course elements with faculty members and Foundational Course Initiative (FCI) to provide a better learning experience to students and enable a more sustainable teaching process for instructors

VOLUNTEERING + OUT REACH

AL4ALL, University of Michigan, Ann Arbor, MI

Instructor, course director: Dr. David Fouhey

July 2021, July 2022

- Led presentations and projects in two-week-long courses to explore computer science and artificial intelligence (AI) topics for Michigan high school students underrepresented in AI

PROJECTS

Michigan Autonomous Aerial Vehicles, Ann Arbor, MI

Software Engineer, Software Lead

February 2016 – May 2019

- Led multidisciplinary team to compete in the International Aerial Robotics Competition
- Designed high-level software architecture, conducted code review, and mentored new students on computer vision and programming tools
- Developed real-time algorithms to detect and classify lines, landmarks and ground objects in noisy backgrounds using OpenCV

COURSEWORK

Artificial intelligence: Computer vision, Machine learning, Deep learning, Unsupervised visual learning, Adversarial machine learning, Artificial intelligence, Data science & predictive analysis, Signal processing and machine learning

Math: Matrix methods, Probability & distribution theory, Statistical inference, Math of biological networks

Robotics: Autonomous robotics, Mobile robotics

Computer science: Design and analysis of algorithms, Operating systems, Web systems, Computer security, Compilers, Succinct graph data structures,

Bioinformatics: Bioinformatics concepts and algorithms, Biology for computational scientists

ACTIVITIES AND ORGANIZATIONS

- Michigan Marching Band
- Eta Kappa Nu
- Kappa Kappa Psi

August 2015 – January 2019

April 2018 – May 2019

January 2017 – May 2019

SKILLS

Programming languages: Python, Matlab, Julia, R, C++, C, Java, Javascript, Bash, SQL

Markup languages: L^AT_EX, HTML, CSS

Frameworks: PyTorch, TensorFlow, Keras, Scikit-Learn, Matplotlib, OpenCV, LCM, RealSense, Flask, React, Hadoop

Tools: Git, Vim, Makefile, CMake, LLVM, GDB, Valgrind