

Jared Hwang

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EDUCATION

University of Southern California, Los Angeles, CA May 2021–Dec 2022
Master of Science (expected 2022), Computer Science; Graduate with Honors, GPA 4.00

Tufts University, Medford, MA Aug 2016–May 2020
Bachelor of Science, double major Computer Science, Physics; GPA 3.94
summa cum laude, N. Hobbs Knight Scholarship, Sigma Pi Sigma Honor Society

RESEARCH

Machine Learning Research Assistant, Dr. Taritree Wongjirad, Tufts University, Medford, MA May 2020–Sep 2021

- Designed and implemented file compression method using machine learning autoencoders in Python/C++
- Achieved up to 80% smaller file sizes of ROOT detector images compared to traditional JPEG compression
- Built neural network with spatial loss algorithm to classify and segment particle interactions in detector images
- Cleaned and labeled detector data using Python and ROOT; created two benchmarks to evaluate neural network

Applied Research Assistant, Dr. Janet Conrad, MIT, Cambridge, MA Jun 2018–Mar 2020

- Led development of a first-of-its-kind flexible, parallel particle accelerator simulation code and interface in Python
- Ran million+ particle scale simulations with superior real-world accuracy and up to 20% faster than prior solutions
- Engineered diagnostic tools that analyzed and presented results (energy, emittance) of high-resolution simulations
- Assembled and monitored dihydrogen beam line and beam control system for 10+ hours of uptime

Research Assistant, Dr. Anna Sajina, Tufts University, Medford, MA Sep 2017–May 2018

- Analyzed, manipulated, and visualized large astronomical data sets using Python and TOPCAT
- Collected, cross-matched, and unified data from two astronomical surveys (HerMES, SERVS)

PROJECTS

Simulation Inference on Urban Data, USC, Los Angeles, CA Nov 2021 – Dec 2021

- Applied Bayesian conditional density estimation simulation inference on traffic simulations of the Seattle area
- Observed a meaningful correlation between traffic light timings and shortened trip times in the wider region
- Ran headless simulations on USC high performance clusters with Nvidia GPUs using Docker

Data Visualization of U.S. Avocado Consumption, Tufts University, Medford, MA Mar 2020

- Created an interactive visualization displaying U.S. avocado price and volume trends, in team of two
- Presented, compared, and summarized historical trends in 41 U.S. cities in an easily digestible manner

LEADERSHIP & INVOLVEMENT

Computer Science Teaching Assistant, Tufts University, Medford, MA Sep 2018–May 2020

- TA for COMP40 Machine Structure and Assembly Language, and COMP105 Programming Languages
- Taught concepts and course material in office hours three times a week
- Co-led a weekly discussion to overview and teach course material

RELEVANT COURSEWORK

- Algorithms
- Computation Theory
- Database Systems
- Machine Learning
- Artificial Intelligence
- Multimedia Systems
- Machine Structure and Assembly Language Programming
- Programming Languages
- Computational Physics
- Electronics
- Quantum Information Theory

SKILLS

Computer: Proficient in Python, C++, C, Java, JavaScript, SQL, Ruby, MATLAB, Git, Unix, PyTorch, TensorFlow
Language: Conversational Mandarin, Conversational Japanese