Shraman Ray Chaudhuri

100 Memorial Dr. | Cambridge, MA | shraman@mit.edu | (858) 243-2292 | github.com/shraman-rc

EDUCATION

Massachusetts Institute of Technology (MIT) **Cambridge, MA**

Candidate for Master of Engineering June 2018

Concentrations: Artificial Intelligence, Computer Systems; GPA: 5.0/5.0

Bachelor of Science June 2017

Major: Electrical Engineering and Computer Science; Minor: Mathematics; GPA: 4.8/5.0

Relevant Coursework: Computer Vision, Advanced Algorithms, Numerical Methods for PDEs, Robotics, Machine Learning, Performance Engineering, Distributed Systems Engineering

WORK EXPERIENCE

D. E. Shaw Research **New York, NY**

Software Engineering / Applied Math Intern May 2016 – August 2016

- Worked on large-scale simulation software for molecular dynamics (MD).
- Implemented and optimized a particle-mesh Poisson solver in C++ to compute far-field molecular energies.
- Developed a header-only template library for composing and simulating novel force-field models.
- Implemented various numerical algorithms (e.g. Gauss quadrature) on both CPU and GPU.

SpaceX **Hawthorne, CA**

Software Engineering Intern May 2015 – August 2015

- Worked with the Propulsion team on machine learning tools for rocket telemetry.
- Designed and implemented a distributed system for compressing, storing, de-noising, and retrieving large volumes of time-series data across multiple clients and servers.
- Developed an automated anomaly detection algorithm using SVMs and wavelet-based signal processing.

Amplify, Inc. **New York, NY**

Winter Extern Jan 2015 – Feb 2015

- Developed a recommender system for the app store using collaborative filtering and PCA.

RESEARCH

MIT CSAIL **Cambridge, MA**

Graduate Research Assistant June 2017 – Present

- Exploring probabilistic models and deep learning methods for 2D-to-3D reconstruction and pose estimation.
- Developed a Python/C++ library for particle-based physics simulation using NVIDIA's FleX backend.
- Developed several research tools including a mesh rendering pipeline and neural net debugger.

MIT CSAIL **Cambridge, MA**

Undergraduate Research Assistant Jan 2016 – June 2017

- Designed and implemented algorithms for 3D deep learning on multicore CPUs, leveraging AVX vectorization, dynamic multithreading, sparse convolutions, and other optimizations (paper accepted to ICML 2017).
- Developed recurrent and convolutional neural net models for iterative image segmentation.

SELECT PROJECTS

Leiserchess AI
A performance-engineered AI bot for a variant of chess. Implements parallel tree search, iterative deepening, bit hacks, and several platform-specific optimizations. (github)

Autonomous Racecar
A ROS-based system that implements particle filter localization, object recognition, motion-planning, and LIDAR signal processing. (Final project for Robotics course)

SecFS
A secure, concurrent file-system that uses hash trees, fork consistency, and public-key cryptography to protect against compromised servers and MITM attacks. (github)

ACTIVITIES

Algorithms II Head TA
Teach recitations, write homework/exam problems, and lead staff meetings. Topics include linear programs, randomized/sublinear/approximation algorithms, gradient descent, flow, etc.

Machine Intelligence Community
Organize a weekly reading group for undergrads to present and discuss modern ML research. Developing an open-source platform for collaborative ML projects.

IEEE/ACM Club
Organize events for faculty-student interaction (e.g. faculty dinners, research panels), talks/demos from industry partners, and tutoring services.

SKILLS

Languages: C++[11/14], Python, C, MATLAB, Java | **Tools:** TensorFlow, Torch, OpenGL, OpenCV, CUDA, gcc, Cilk, Git, Bash