Charles Tang

chuck.tang98@gmail.com | https://github.com/j316chuck | https://j316chuck.github.io

EDUCATION

UC BERKELEY
M.S. EECS 2021
GPA: 3.87/4.0

UC BERKELEY
B.A. CS 2020
Magna Cum Laude
GPA: 3.89/4.0

COURSEWORK

GRADUATE
Natural Language Processing
Deep Reinforcement Learning
Computer Vision
Robotics

UNDERGRADUATE
Data Structures
Artificial Intelligence
Machine Learning
Operating Systems
Programming Languages
Probability and Random Processes
Optimization
Numerical Analysis
Quantum Mechanics

SKILLS

Python • Pytorch • Docker • Java •
Matlab • C++ • C • Bash • React •
Typescript • Tensorflow • Jax •
Continuous Integration • Spark • MySQL

PROJECTS

GPT LANGUAGE MODELING
Coded and trained a transformer model on the OpenWebText dataset. Integrated a memory component into the GPT-2 language model.

POINTMASS RL EXPLORATION
Trained a point-mass robot to navigate 2D continuous environment using PPO, DQN, and Model-Based RL.

CODE GENERATION
Used terminal feedback to improve upon code generation in human eval by 15% from GPT3.5.

FLUID DYNAMICS SIMULATION
Simulated real-time 2D fluid dynamics by solving the Navier-Stokes PDE.

WORK EXPERIENCE

MOSAICML | Research Engineer
07/2023 - Present | San Francisco
- Building open source LLM training infrastructure projects (i.e.: profiling, docker images, FP8 training, regression testing, alt hardware (AMD), and sparsity).
- Part of the team that built DBRX the best open source LLM as of March 2024

APPLIED INTUITION | Software Engineer ML Team
08/2021 - 05/2023 | Mountain View
- Recreated the nuScenes autonomous driving dataset in simulation achieving a sim-to-real gap of less than 5% mAP. Published results at the Automotive LiDAR conference which helped close the Ouster customer deal
- Published CVPR paper on improving rare class LiDAR segmentations using synthetic class up-sampling, data mixing, domain randomization, and loss-imbalanced fine-tuning (+8.5 mIOU from baseline). Paper lead to creation of the new synthetic datasets product.

TESLA AUTOPILOT | Simulation Software Engineer Intern
06/2020 - 08/2020 | Palo Alto
- Wrote the clip to sim pipeline that converts real drive logs into Unreal simulation scenarios. Internship work presented at Tesla AI Day 2021.
- Wrote simulation scenarios for speed limit signs used in production

QUORA | Data Infrastructure Software Engineer Intern
05/2019 - 08/2019 | Mountain View
- Estimated Airflow DAG finish times with previous historical task finish times

JOHNSON AND JOHNSON | Machine Learning Intern
06/2018 - 08/2018 | San Diego
- Employed the Felzenszwalb algorithm in OpenCV to segment skin disease images. Proposed segmentation regions were fed into a CNN which separated lesion and non-lesional regions with 90% cross validation accuracy.
- Internship work lead to the patent: Method of Determining Severity of Skin Disease Based on Percentage of Body Surface Area Covered by Lesions.

RESEARCH AND TEACHING

ROBOTICS | Hybrid Systems Research Lab
09/2019 - 05/2021 | Professor Claire Tomlin
- Sped up the backwards reachable safety set calculation using C++, local queue updates, and warm start techniques by 6x.
- Thesis investigated different controller blending schemes between backwards reachable sets and spline planners for autonomous robotic navigation

MACHINE LEARNING | Berkeley AI Research Lab
06/2018 - 12/2019 | Professor Jennifer Listgarten
- Compared different generative models (HMM, VAE, RNN) and their abilities to generate protein sequences similar to the original training set in PyTorch
- Analyzed linear and nonlinear loss function errors when one relaxes the simplex to the discrete space using the gumbel softmax trick

UC BERKELEY | Intro to AI Teaching Assistant
01/2019 - 01/2020 | UC Berkeley
- Hosted weekly discussions, lead office hours, and developed exam problems.
- Taught topics such as reinforcement learning, bayes nets, alpha-beta pruning.