

Charles Tang

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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
Computer Graphics
Robotics

UNDERGRADUATE

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

SKILLS

PROGRAMMING

Java • Python • Matlab • C++ • C • Bash
• React • Javascript

PROJECTS

GPT LANGUAGE MODELING

- Built and trained a GPT-2 transformer on the OpenWebText dataset. Validation loss reaches 3.3 after 1 billion tokens mirroring the training curves from OpenAI. Integrated a memory component into the GPT-2 language model.

POINTMASS RL EXPLORATION

- Trained a point-mass robot to navigate a maze environment using PPO, DQN, Model-Based RL, and RND exploration bonuses

MESH RECONSTRUCTION

- Experimented with different NERF techniques to obtain 3D game assets from self-driving car datasets.

EXPERIENCE

APPLIED INTUITION | MACHINE LEARNING ENGINEER

08/2021 - Present | Mountain View

- Recreated the nuScenes dataset entirely in simulation (30k LiDAR frames), achieving a sim-to-real domain gap of less than 5% mAP as assessed by the CenterPoint 3D Object Detection inference scores. [Blog Post](#)
- Published CVPR Workshop paper on improving LiDAR segmentation for rare bicyclist classes via synthetic data up-sampling, data mixing strategies, domain randomization, and loss-imbalanced fine-tuning (+8.5 mIOU from baseline).
- ML experiments helped close the Ouster partnership deal and launch a new product synthetic datasets

TESLA AUTOPILOT | SIMULATION SOFTWARE ENGINEER INTERN

06/2020 - 08/2020 | Palo Alto

- Wrote the clip to sim pipeline that converts real data 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

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.

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

ROBOTICS | HYBRID SYSTEMS RESEARCH LAB

09/2019 - 05/2021 | Professor Claire Tomlin

- Sped up the backwards reachable safety set calculation by 6x using C++, local queue updates, and warm start techniques.
- Investigated different controller blending schemes between backwards reachable sets and spline planners for autonomous robotic navigation in Matlab

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

COMPUTATIONAL BIOLOGY | CENTER FOR COMP. BIO

02/2018 - 06/2018 | Professor Nir Yosef

- Built R wrapper package around the C++ LINE dimensionality reduction algorithm using devtools, testthat, and Roxygen