Roger Wang

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EDUCATION

Georgia Institute of Technology - *Masters in Computer Science* *Present*

University of California, Los Angeles - *Aerospace Engineering, B.S., Data Science minor* *December 2024*

- Relevant Coursework: Deep Learning for Computer Vision, Artificial Intelligence and Search Algorithms, Data Structures and Algorithms, Data Science, C++, Computer Organization, Probability, Statistics, Linear Algebra
- Activities: *UCLA Rocket Project, UCLA DataRes Research, ASUCLA Supervisor*

PROFESSIONAL

LiveMechX Lab, University of Osaka *Osaka, Japan*

Urban Search and Rescue Robot, Data Science Intern *June 2023 - August 2023*

- Developed Arduino script for efficient wireless transmission and collection of onboard Adafruit IMU sensor data
- Implemented end-to-end data collection, preprocessing, model training and evaluation pipeline in Python
- Optimized robotic localization accuracy to 76% by leveraging regression tree models and gradient boosting trees
- Assisted in training and evaluating human image detection models using low-resolution infrared cameras

PROJECTS

Quadcopter Embedded Flight Software *Los Angeles, CA*

Personal Project - C, STM32 HAL *February 2025 - Present*

- Developing flight software for a custom avionics stack with STM32 + 9DOF IMU + Altimeter + GPS + NRF24
- Writing embedded drivers, Kalman, and Madgwick filters in C for real-time sensor fusion and state estimation
- Implementing autonomous features w/ low-level PID autopilot and object detection using OpenCV and Rasp-Pi 3

Exploring Crime with San Francisco's Police Report Database *Los Angeles, CA*

Personal Project - Python, Pandas, Matplotlib, Sk-learn, XGBoost, PyTorch *March 2025 - April 2025*

- Analyzed publicly available datasets of over 900k police incident reports in SF since 2018 (EDA in Python)
- Achieved 1.701 log-loss in 17-incident classification using ensemble of RandomForests, XGBoost, and NN
- Forecasted 2025 daily crime rates using XGBoost time series regression on lagged + moving window dataset

Applying Generative Data Augmentation in Data Scarce Environments *Los Angeles, CA*

Academic Project - Python, Huggingface, PyTorch *November 2024 - December 2024*

- Fine tuned Stable Diffusion using Dreambooth to generate realistic, subject specific images of Felis cat species
- Doubled size of classification training dataset from ~500 to ~1200 using generative data augmentation
- Boosted Felis image classification accuracy using ResNet18 by 12% on initial and 3% on pretrained models

MiniPlaces Classification Challenge *Los Angeles, CA*

Academic Project - Python, PyTorch, XGBoost *October 2024 - November 2024*

- Placed in 10th percentile using CNN ensemble of ResNet, RegNet, and EfficientNet with top-1 accuracy of 64%
- Experimented with CNN-XGBoost hybrid models, passing high-level features as boosting inputs (58% acc)
- Boosted evaluation accuracy of all model by more than 2% by leveraging test-time augmentations (FiveCrop)
- Achieved 76% acc by replicating winning techniques (ensemble confidence, label smoothing, mixed precision)

Insurance Sentiment Classification and Used Car Price Regression *Los Angeles, CA*

Kaggle Competitions - Python, Optuna *July 2024 - September 2024*

- Implemented models in Python with popular gradient boosting trees libraries (XGBoost, LightGBM, CatBoost)
- Created an automated ML pipeline including hyperparameter search in Optuna for fast and efficient prototyping

Convolutional Neural Networks on Image Classification *Los Angeles, CA*

Personal Project - Python, PyTorch, AWS EC2 Cloud Compute *October 2023 - January 2024*

- Explored CNN models in PyTorch and leveraged accelerated training on AWS EC2 cloud instances (g4dn)

SKILLS

Languages: C++, C, Python, MATLAB, SQL, HTML/CSS, JS

Libraries/Frameworks: Pandas, Sk-Learn, PyTorch, Huggingface, OpenCV, Matplotlib, XGBoost, STM32, AWS + GCP

Domains: Machine/Deep Learning, Computer Vision, Generative AI, Embedded Programming, Cloud Computing