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 Engineering, Minor* *Dec 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 collection and transmission of live on-board IMU sensor data
- Implemented end-to-end data collection, preprocessing, model training and evaluation pipeline in Python
- Leveraged regression tree models and gradient boosting trees to optimize robotic localization accuracy (0.76 acc)
- Assisted in training and evaluating human image detection models using low-resolution infrared cameras

PROJECTS

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

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

- Analyzing publicly available datasets of over 900k police incident reports in SF since 2018 (EDA in Python)
- Ensembling RandomForests, XGBoost, and NNs to predict 17-criminal incident categories (Log-loss 1.701)
- Performing time series forecasting using XGBoost on windowed + lagged data to predict 2025 incident frequency

Quadcopter Design, Build, and Fly *Los Angeles, CA*

Personal Project - C, Drones, Embedded Systems, PID Control, Kalman + Madgwick, Sensor Fusion *February 2025 - Present*

- Designing a custom quadcopter drone in Fusion360, w/ 3D printing of prototype airframes on Neptune 3 Pro
- Compiling electrical schematics in KiCad for custom avionics stack with STM32 + 9DOF IMU + GPS + NRF24
- Writing drivers + Kalman/Madgwick filter in C for real-time embedded sensor fusion and state estimation
- Implementing autonomous features w/ low-level PID autopilot and object detection using OpenCV and Rasp-Pi 3

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

Academic Project - Python, Huggingface, PyTorch, Diffusion Models, Image Classification *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, CNN, Image Classification, XGBoost *October 2024 - November 2024*

- Developed ensemble of several top CNN's (ResNet, RegNet, EfficientNet) with 64% top-1 acc (placed top 10%)
- Experimented with CNN-XGBoost hybrid models, passing high-level features as boosting inputs (58% acc)
- Leveraged test-time augmentations (FiveCrop) to increase evaluation accuracy of all models by more than 2%
- Replicated winning techniques post-comp (ensemble confidence, label smoothing, mixed precision) to 76% acc

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

Kaggle Competitions - Python, Optuna, Gradient Boosting Trees *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++, Python, MATLAB (3+ yrs); Pandas, Sk-Learn, PyTorch, SQL (2+ yrs), Huggingface, OpenCV (1 yr)

Technical: Cloud Computing (AWS + Colab), Machine/Deep Learning, Image Classification, Object Detection, Computer Vision, Gradient Boosting, Robotics, Generative AI, Embedded Systems, Drone GNC