Roger Wang

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EDUCATION

University of California, Los Angeles *Los Angeles, CA*

Aerospace Engineering, B.S., Data Science Engineering, 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 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, including gradient boosting trees, to optimize robotic localization accuracy
- Assisted in training and evaluating human image detection models using low-resolution infrared cameras

PROJECTS

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

Personal Project *February 2025 - Present*

- Designing a homemade quadcopter drone in Fusion360, w/ 3D printing of prototype airframes on Neptune 3 Pro
- Compiling electrical schematics in KiCad for custom avionics stack featuring STM32 + 9DOF IMU + GPS fusion
- Implementing autonomous features w/ low-level autopilot and object detection using OpenCV and Rasp-Pi3

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

Academic Project *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 *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%
- Automated the hyperparameter search pipeline for learning rate and weight decay to facilitate hands-free tuning
- 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 *July 2024 - September 2024*

- Implemented models in Python with top 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 *October 2023 - January 2024*

- Explored several influential CNN architectures of the past decade including: ResNet, Inception, and VGG
- Executed in PyTorch and leveraged accelerated training on AWS EC2 cloud computing instances (g4dn)

Data Structures and Software Applications *Los Angeles, CA*

Academic Project *January 2023 - March 2023*

- Studied several common data structures in C++ to optimize programs: linked lists, sets, binary trees, and heaps
- Built Mario Game clone and created a Netflix recommender system with databases (>100k) as tree multimaps

SKILLS

Languages: C++, Python, MATLAB (3+ yrs); Pandas, Scikit-Learn, PyTorch (2+ yrs), Huggingface, OpenCV (1 yr)

Technical: Cloud Computing (AWS + Colab), Machine Learning and Deep Learning Algorithms, Image Classification, Object Detection, Computer Vision, Gradient Boosting Trees, Robotics, Sensor Fusion, Generative AI