Roger Wang

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EDUCATION

University of California, Los Angeles Los Angeles, CA

Aerospace Engineering, B.S., Data Science Engineering, Minor – 3.2 GPA December 2024

- Relevant Coursework: Deep Learning for Computer Vision, Artificial Intelligence and Search Algorithms, Data Science Fundamentals, Algorithms, Discrete Structures, Data Structures and Algorithms, Computer Science and C++, Computer Organization, Probability, Statistics, Linear Algebra, Differential Equations, Calculus
- 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
- Generated confusion matrices from experiments to contribute to model selection (best: 0.9985 acc w/ SVM)

PROJECTS

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 model of several top CNN's (ResNet, RegNet, EfficientNet) with 64.4% top-1 acc (16th)
- 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, half precision) to 76% acc
- Implemented Vision Transformer (ViT) from scratch and used encoding backbone for semantic segmentation

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
- Trained and evaluated on several benchmark datasets: FashionMNIST (0.913 acc) and Imagenet subset
- 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 involving a variety of interactive actors to control players, projectiles, and world tiles
- Created a Netflix show recommender system with movie and user databases (>100k) as tree multimaps

SKILLS

Languages: C++, Python, MATLAB (3+ years); Pandas, Scikit-Learn, (2+ years), PyTorch, Huggingface (1 year)

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