Derek (Winter) Hua

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Education

University of California, Los Angeles — Los Angeles, CA
Bachelor of Science, Computer Engineering | GPA: 3.75 | Engineering Honors College — Jun. 2024
Master of Science, Computer Science — Jun. 2025

Experience

Algorithm Research and Development Intern — Jun. 2024 – Present
Abbott Diabetes Care — *Alameda, CA*
- Developing deep learning models using PyTorch and AWS SageMaker to predict glucose levels for diabetic patients, achieving a 15% increase in accuracy by combining continuous glucose monitoring data and insulin modalities
- Performing hyperparameter tuning across multiple architectures using grid search and Bayesian optimization
- Creating datasets from studies using pandas and NumPy with data cleaning and interpolation for missing data

Machine Learning Intern — Mar. 2024 – Jun. 2024
Hoop — *New York, NY*
- Developed an optimized pipeline utilizing advanced LLM prompting techniques to extract purchased items from email receipts, achieving a 200% increase in speed and a 400% reduction in costs
- Developed web scraping techniques to collect data from online reselling platforms, delivering key metrics
- Analyzed data presenting insights on resale value and sell-through rate to improve market understanding

Artificial Intelligence Engineer Intern — Jun. 2023 – Sep. 2023
Lockheed Martin — *Sunnyvale, CA*
- Designed a foundation computer vision model using TensorFlow within an agile work environment, yielding a novel architecture to generate embeddings for satellite anomaly detection and tracking
- Engineered Keras training loop for transfer learning from a backbone model with a custom unsupervised loss function, resulting in rich embeddings and distinct clusters
- Created large image datasets from satellite imagery using data augmentation techniques for model training

Undergraduate Researcher — Jun. 2021 – Jun. 2024
Networked and Embedded Systems Laboratory — *Los Angeles, CA*

MobiVital — *Sep. 2022 - Present*
- Researched deep learning techniques for radar signal reconstruction leveraging generative AI architectures
- Created heartbeat and respiratory signal datasets for wireless vital monitoring with ultra-wideband radar
- Enhanced models from academic papers in PyTorch, introducing architectural modifications such as residual connections and attention mechanisms to improve model performance

Capricorn — *Jun. 2021 - Jun. 2022*
- Wang, Z. et al. "Capricorn: Towards Real-Time Rich Scene Analysis Using RF-Vision Sensor Fusion." SenSys '22
- Trained SVM classifier with 97% accuracy to detect internal states of appliances using UWB radar sensors
- Designed data collection strategy to capture vibrational signatures of appliances in varied positions and modes

Projects

LLM Factuality and Fairness Evaluation | *PyTorch, Hugging Face, GCP, NLP* — Jan. 2024 – Mar. 2024
- Engineered a system to evaluate LLMs for language fairness and factuality using PyTorch and HuggingFace
- Designed zero-shot, few-shot, evidence, and chain-of-thought prompting mechanisms and evaluation metrics
- Integrated GPT-3.5 and Mixtral for evidence generation via API endpoints, improving F1-score by 27%

Bruinfessions | *React, Node.js, Firebase, Git, Javascript, CSS* — Mar. 2022
- Designed an anonymous forum, facilitating user engagement through posting, liking, and favoriting features
- Implemented real-time, dynamic content sorting and interaction capabilities leveraging React and JavaScript
- Engineered backend and Google Auth using Firebase and Node.js for data storage, retrieval, and synchronization

Technical Skills

Languages: Python, C/C++, Java, JavaScript, HTML/CSS, MATLAB
Frameworks/Tools: React, Node.js, Firebase, Docker, Git, AWS SageMaker
Libraries: PyTorch, TensorFlow, Keras, scikit-learn, Hugging Face, NumPy, pandas, OpenCV, Matplotlib