

DIJIE ZHU

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EDUCATION

University of California, Los Angeles

Sep 2024 – Present

Master of Science in Electrical and Computer Engineering

GPA: 3.957/4.0

Major Courses: Neural Network and Deep Learning(A+), Advanced Neural Network and Deep Learning(A), Computational Robotics (A), Modern Wireless Communication Systems (A), Large Scale Data Mining (A), Statistical Machine Learning(A-), Digital Communication System(A),

University of Electronic Science and Technology of China & University of Glasgow

Sep 2020 – Jun 2024

Bachelor of Engineering in Electrical and Electronic Engineering (Joint Programme)

First Class Honours (UK);

GPA: 3.9/4.0; Ranking: 3/169

Major Courses: Microelectronic Systems (99), Circuit Analysis and Design (95), Signals and Systems (95), Communications Networks (84), AI and Machine Learning (95), Digital Circuit Design (86)

RESEARCH EXPERIENCE

Dynamic Threshold Adjustment and Novel Pseudo-Labeling Methods

Mar 2025 – Present

Instructor: Suhas Diggavi, UCLA Semi-Supervised Learning

- **Coding Language: Python**
- Simulated FixMatch and MixMatch on CIFAR-10 and SVHN, implementing pseudo-labeling and consistency regularization in PyTorch.
- Developed a conformal prediction framework to generate positive and negative pseudo-label sets for unlabeled samples.
- Designed dynamic threshold adjustment to update confidence bounds each epoch, enhancing pseudo-label precision and recall.
- Benchmarked against FixMatch and MixMatch baselines, demonstrating improvements in accuracy and robustness under label scarcity.

NN-Aided Digital SIC under Time-Varying Channels

Sep 2024 – Jan 2025

Instructor: Ian Roberts, UCLA Neural Network, Signal Processing, Communication Systems

- **Coding Language: MATLAB, Python**
- Implemented an MLP-based neural network in MATLAB for digital SIC in IBFD systems under time-varying channels, solving an inverse channel-estimation problem.
- Engineered linear preprocessing features to encode channel dynamics without frame-wise retraining, reducing computational complexity by $\sim 75\%$.
- Conducted physics-based simulations with Jakes' fading model; achieved mean SIC gain of 6.93 dB with variance 1.21 dB².
- Benchmarked against adaptive memory-polynomial and residual NN methods; demonstrated superior stability (variance $\downarrow 30\times$) and real-time feasibility.

CNN-Based Real-Time Street Photo Multi-Target Segmentation

Dec 2022 – Feb 2023

Instructor: Alexander Amini, MIT Computer Vision, Machine Learning

- **Coding Language: Python**

- Developed a custom PyTorch DataLoader pipeline for efficient preprocessing, augmentation, and batching to support real-time segmentation inference.
- Architected and implemented a convolutional neural network with optimized layer dimensions and skip connections for simultaneous multi-object detection and segmentation.
- Integrated aleatoric and epistemic uncertainty estimation to quantify model confidence and guide selective data acquisition.
- Achieved 95% training accuracy and 90% evaluation accuracy, earning a final project score of 93/100.

5.5G to 6G IBFD System Simulation: Three-Stage SI Cancellation Techniques

Sep 2023 – Jun 2024

Instructor: Ying Liu, UESTC Signal Processing, Communication Systems

- **Coding Language: MATLAB, Python**
- Simulated horn-antenna rotation ($0^\circ \rightarrow 90^\circ$) under a 3GPP CDL channel, achieving 35 dB directional isolation + 47 dB path-loss (total ≈ 82 dB passive SIC).
- Designed a two-tap FIR cancellation network targeting the direct path and strongest reflection, realizing ≈ 30 dB suppression pre-ADC via adaptive analog filtering.
- Applied a modified variable-step LMS algorithm ($\alpha = 10$, $\beta = 0.02$, $m = 3$, 15-tap FIR) to cancel residual interference, adding ≈ 5 dB and achieving ≈ 117 dB end-to-end SIC.

Autonomous Mobile Robot: Multi-Environment Task Fulfillment

Mar 2023 – Jun 2023

Instructor: Abdullah Al-Khalidi, UESTC & Glasgow Embedded Systems, Control, Computer Vision, Communication Systems

- **Coding Language: C/C++, Python**
- Coordinated a team of 10 students; designed and assembled the robotic vehicle's mechanical, communication, vision, and control modules.
- Implemented HC-12 wireless link for real-time data exchange with the host PC.
- Achieved smooth navigation and decision execution through EMA filtering, YOLOv3, and PID integration.
- Validated performance in multiple environments, achieving 95% average task completion and a project score of 92/100.

PUBLICATIONS

- Fang Nan, Nanxi Li, **Dijie Zhu**, Yuetian Zhou, Sujie Dai, Jianchi Zhu, Jinlong Tian, Xiaoming She, *Digital Nonlinearity Cancellation Architecture Based on An Auxiliary Transmit Antenna Array*, ITCC'23: Proceedings of the 2023 5th International Conference on Information Technology and Computer Communications, June 2023, pp. 32–37. DOI: 10.1145/3606843.3606849
- Mengyao Zhang, Jian Liu, **Dijie Zhu**, Xin Quan, Qiang Xu, Ying Liu, Zhi Chen, *A Post-Correction Method for Terahertz Nonlinear Distortion with Dual-Band Carrier Aggregation*, 2022 IEEE Globecom Workshops: Sixth IEEE International Workshop on Terahertz Communications, Oct 2022.
- Cong Chen, Zixuan Long, Fang Nan, Luyao Xiao, **Dijie Zhu**, Xiang Li, Ying Liu, Shihai Shao, *Improved Almost Blank Subframe Technology with Cooperative Interference Suppression*, International Journal of Numerical Modelling: Electronic Networks, Devices, and Fields, Mar 2023.

TECHNICAL STRENGTHS

Programming Languages	C/C++, Python, MATLAB, Vivado
ML Inference & Serialization	PyTorch, TensorFlow
Other Tools	Git, Jupyter