

Dijie Zhu

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Education

University of California, Los Angeles (UCLA)

Sep 2024 – Present

- M.S. in Electrical and Computer Engineering
- GPA: 3.957/4.0
- **Coursework:** 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 (Joint Programme),

Sep 2020 – Jun 2024

- B.Eng. in Electrical and Electronic Engineering
- GPA: 3.88/4.0, Rank: 3/169, First Class Honours (UK)
- **Coursework:** 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

Los Angeles, CA

Instructor: Suhas Diggavi, UCLA — Semi-Supervised Learning, Computer Vision

Mar 2025 – Nov 2025

- Implemented baselines including InfoMatch, FreeMatch, and FixMatch with reproducible pipelines for rigorous comparison.
- Designed an interpolation scheme between FixMatch and FreeMatch to suppress early pseudo-label noise.
- Developed a Product-of-Experts, lower-bound-based training-progress estimator to guide threshold scheduling without using train/test accuracy.
- Achieved relative error-rate reductions of **4.65%** on CIFAR-10 with 10 labels, **3.82%** on CIFAR-10 with 4000 labels, and **0.82%** on CIFAR-100 with 10000 labels (200 epochs).
- Accelerated convergence speed on WideResNet; reached 90% of final performance in 57/1024 epochs versus 110/1024 for SOTA (**1.93 \times** faster).

NN-Aided Digital SIC under Time-Varying Channels

Los Angeles, CA

Instructor: Ian Roberts, UCLA; — Neural Networks, Signal Processing, Digital Self-Interference Cancellation

Sep 2024 – Jan 2025

- Proposed an MLP canceller with feature recalculation to address two bottlenecks: computational complexity in the SOTA Adaptive Memory Polynomial canceller and the per frame retraining cost of modern neural cancellers.
- Built baseline models including Adaptive MP canceller, Residual canceller, and MLP canceller.
- Achieved mean SIC gains over SOTA of **9.81 dB** with 200 features, **10 dB** with 300 features, and within **5.55 dB** with 400 features. Reduced variance by **93.1%** at 200 features and **0.60 dB²** at 400.
- Surpassed SIC performance of retraining permitted NN canceller including: Residual canceller and MLP canceller
- Writing Sample can be found at Neural Network Aided Digital Self-Interference Cancellation with Time-Varying Channel

5.5G to 6G IBFD System Simulation: Three-Stage Self-Interference Cancellation

Chengdu, China
Sep 2023 – Jun 2024

Instructor: Ying Liu, UESTC — Self-Interference Cancellation, Signal Processing, Communication Systems

- Built a **10 GHz** in-band full-duplex system with a three-stage pipeline across antenna, analog, and digital under a 3GPP CDL model.
- Delivered passive suppression by orienting horn antennas from **0 to 90 degrees** and using **0.5 m** TX and RX spacing in the CDL model. Achieved **35 dB** directional isolation and **47.19 dB** path loss for a total of **82.19 dB** passive cancellation.
- Designed a two-tap analog canceller targeting the direct path and the strongest reflection. Added about **30 dB** pre-ADC suppression.
- Implemented a variable-step LMS digital canceller with a **15-tap** FIR to remove residual interference. Added about **5 dB** further attenuation.
- Achieved **117.19 dB** end-to-end self-interference cancellation at **10 GHz**, approaching the **128 dB** requirement for **4G** full duplex and supporting **5.5G** and **6G** development.

Autonomous Mobile Robot: Multi-Environment Task Fulfillment

Chengdu, China
Mar 2023 – Jun 2023

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

- Led a **10** person team to design and integrate mechanical, communication, perception, and control modules under a **1000 RMB** budget.
- Allocated work across mechanical, perception, control, and communications subteams, set milestones, and ran weekly stand ups to track progress.
- Coordinated advisor syncs and organized team Q&A sessions, consolidated blockers, and maintained shared documentation to speed integration.
- Built an HC-12 wireless link between the robot and host PC for real time telemetry and command streaming.
- Validated across tasks including line following, obstacle avoidance, ramp ascent and descent, wireless command execution, and fixed point ball delivery, achieving **95%** average task completion and a final project score of **92/100**.

Publications

Digital Nonlinearity Cancellation Architecture Based on An Auxiliary Transmit Antenna Array

Jun 2023

Fang Nan, Nanxi Li, **Dijie Zhu**, Yuetian Zhou, Sujie Dai, Jianchi Zhu, Jinlong Tian, Xiaoming She. *ITCC'23: Proceedings of the 2023 5th International Conference on Information Technology and Computer Communications*, pp. 32–37. DOI: 10.1145/3606843.3606849

A Post-Correction Method for Terahertz Nonlinear Distortion with Dual-Band Carrier Aggregation

Oct 2022

Mengyao Zhang, Jian Liu, **Dijie Zhu**, Xin Quan, Qiang Xu, Ying Liu, Zhi Chen. *2022 IEEE Globecom Workshops: Sixth IEEE International Workshop on Terahertz Communications*.

Improved Almost Blank Subframe Technology with Cooperative Interference Suppression

Mar 2023

Cong Chen, Zixuan Long, Fang Nan, Luyao Xiao, **Dijie Zhu**, Xiang Li, Ying Liu, Shihai Shao. *International Journal of Numerical Modelling: Electronic Networks, Devices, and Fields*.

Technical Strengths

Programming: C/C++, Python, MATLAB, Vivado

ML Inference & Serialization: PyTorch, TensorFlow

Tools: Git, Jupyter