YUHENG TU

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Education

Southeast University (SEU) — Nanjing, China
Junior, Pursuing Bachelor of Engineering in Information Science and Engineering — Sep 2021 - Jun 2025
GPA: 3.81/4.0 | **Average Score**: 87.02/100 (Major: 89.09/100)

University of California, Berkeley (UCB) — Berkeley, CA
Exchange Student, Computer Science (already admitted) — Jan 2024 - May 2024

Publications

[1] **Yuheng Tu**, Jianan Liu, Tian Qiu, Yunlang Cai, *Jianan Zhang, Jianwei You, and Tieju Cui. "Fast Design of Metasurface-Based Microwave Absorber Using the neuro-TF Approach." *Photonics and Electromagnetics Research Symposium (PIERS)*, 2023.

Research Experience

Improvement of Bilateral Solver for Computer Vision task — Nanjing, China
Research Assistant, Purple Mountain Lab, Supervisor: Prof. Yinfei Xu — Feb 2023 - Present

- Convolutionalize the loss function of Jon Barron's Fast Bilateral Solver (ECCV 2016 Runner-up) and optimize depth image with it
- Applying Bilateral Solver as an auxiliary loss function to Face Parsing task to achieve matting

Dealing with Time Series in network congestion using MTGNN — Nanjing, China
Research Assistant, Purple Mountain Lab, Supervisor: Prof. Hua Zhang — Sep 2023 - Present

- Prediction of four evaluation parameters in network congestion using ARIMA and LSTM as a comparison
- Applying MTGNN to network congestion problems to utilize the relationship between four parameters

Projects

Developing ML Algorithms to Accelerate Microwave Simulation — Nanjing, China
Project Leader, National-level Student Innovation Project, Supervisor: Prof. Jianan Zhang — Sep 2022 - Sep 2024

- Funding 40,000 CNY
- Supervised regression problem. Neuro-TF model provide accurate and fast prediction of the EM behavior of metasurfaces and thus greatly accelerate the design process
- Using Vector-Fitting algorithm to Extract poles and residues from absorption curves
- Develop the neuro-TF model (The MLP is used to derive poles and residues from geometric parameters, and the transfer function is used to derive absorption from poles and residues)
- Dimensionality Reduction with Autoencoder instead of Vector-Fitting

Federated Learning Algorithms pursuing Data Compression — Nanjing, China
Project Leader, Provincial-level Student Innovation Project, Supervisor: Prof. Yinfei Xu — May 2023 - May 2024

- Funding 8,000 CNY
- Weights are first encoded using quantization method, and then filtered using sparsification method (Weight by Clutering)
- Implementing the algorithm in Fedml

Skills & Interests

Programming Languages: Python, C/C++, MATLAB, SQL, Verilog
Tools & Frameworks: Git, LaTeX, Pytorch, TensorFlow
Platform: Linux (Ubuntu, CentOS), macOS, Windows
Languages: Mandarin (Native), English (Proficient)
Research Interests: Machine Learning