

# YUHENG TU

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## Education

### Southeast University (SEU)

Junior, Pursuing Bachelor of Engineering in Information Science and Engineering

GPA: 3.81/4.0

Nanjing, China

Sep 2021 - Jun 2025

### University of California, Berkeley (UCB)

Exchange Student, Computer Science (already admitted)

Berkeley, CA

Jan 2024 - May 2024

## Publications

[1] **Yuheng Tu**, Jianan Liu, Tian Qiu, Yunlang Cai, \*Jianan Zhang, Jianwei You, and Tiejun 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

Research Assistant, Purple Mountain Lab, Supervisor: Prof. Yinfei Xu

Nanjing, China

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

Research Assistant, Purple Mountain Lab, Supervisor: Prof. Hua Zhang

Nanjing, China

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

Project Leader, National-level Student Innovation Project, Supervisor: Prof. Jianan Zhang

Nanjing, China

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 absorbance 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 absorbance from poles and residues)
- Dimensionality Reduction with Autoencoder instead of Vector-Fitting

### Federated Learning Algorithms pursuing Data Compression

Project Leader, Provincial-level Student Innovation Project, Supervisor: Prof. Yinfei Xu

Nanjing, China

May 2023 - May 2024

- Funding 8,000 CNY
- Weights are first encoded using quantization method, and then filtered using sparsification method (Weight by Clustering)
- 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