# 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 (Major: 3.94/4.0)

**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 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** **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