

# 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 (Major: 3.94/4.0)

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] Guojun Chen, **Yuheng Tu**, Tiecheng Song, Yinfei Xu, Jing Hu, and Lun Xin. "NQFL: Nonuniform Quantization for Communication Efficient Federated Learning." *IEEE Communications Letters (COMML)*, in submission.

[2] **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

Aug 2023 - Present

- Convolutionalize the loss function of The Fast Bilateral Solver and optimize depth image with it
- Applying Bilateral Solver as auxiliary loss function to face parsing task to achieve matting

## Projects

### Federated Learning Algorithms pursuing Gradient Compression

Project Leader, Provincial-level Undergrad Research Project, Supervisor: Prof. Yinfei Xu

Nanjing, China

May 2023 - May 2024

- Funding 8,000 CNY
- Develop the NQFL model which first normalize the gradients then quantize them with Lloyd-max algorithm
- Implement NQFL, QSGD, AdaQuantFL, SLMQ in Fedml

### Developing ML Algorithms to Accelerate Microwave Simulation

Project Leader, National-level Undergrad Research Project, Supervisor: Prof. Jianan Zhang

Nanjing, China

Sep 2022 - Sep 2024

- Funding 40,000 CNY
- Extract poles and residues from absorbance curves with Vector-Fitting algorithm
- 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

## Skills & Interests

**Programming Languages:** Python, C/C++, MATLAB, SQL, Verilog

**Tools & Frameworks:** Pytorch, TensorFlow, Fedml, Git, LaTeX

**Platform:** Linux (Ubuntu, CentOS), macOS, Windows

**Languages:** Mandarin (Native), English (Proficient)

**Research Interests:** Machine Learning