# Yusen Wu

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## Education

**Sichuan University (SCU)**, Chengdu, China — Sep. 2021 – Present

*Undergraduate* in Computer Science and Technology (Top-notch program)
**GPA**: 3.93/4.00, **Average Score**: 92.60/100

## Research Experience

**Layer-wised Sparsification Based on Hypernetwork for Distributed NN Training** — Oct. 2023 – Mar. 2021

*Team Lead* Supervisor: Qing Ye (Sichuan University)

- Proposed a layer-wised sparsification method which utilizes hypernetworks to narrow down the communication volume.
- Constructed an efficient objective function for the hypernetwork to guide the selection of layers for transmission, ensuring that layers which contribute more to the learning process are prioritized to transmit.
- Conducted extensive experiments on different models and datasets. The results validate the efficacy of our method and demonstrate its compatibility with other current compression techniques (e.g., TernGrad, Top-K).

**outcome:** ($1^{st}$ author) A research paper in submission.

**Masked Unmasked Face Recognition** — Jul. 2023

*Team Lead* Supervisor: Terence Sim (National University of Singapore)

This is a summer workshop in NUS SoC.

- Developed face mask recognition algorithms, using dlib for facial detection, landmark-based mask simulation, and HOG for feature extraction. Employed SVM for training and testing, achieving accurate mask identification in small datasets.
- Applied ECCV principles for face alignment, utilized features like HoG, Sobel, and PCA, and employed k-nearest neighbors for effective employee classification.
- Utilized HoG, Sobel, and Histogram Distance as initial features, employed bagging for enhanced accuracy, and implemented High-dim LBP.

**Saliency Detection for RGB-D Images Based on Swin Transformer** — Oct. 2022 – Jun. 2023

*Participant* Supervisor: Shiyong Lan (Sichuan University)

- Self-learned Python and foundational knowledge in deep learning, as well as neural network architectures.
- Coded classic neural network structures, replicating experiments to enhance proficiency.

## Honors and Awards

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| National Scholarship in Sichuan University | 2021 – 2022 |
| Merit Student in Sichuan University | 2021 – 2022, 2022 – 2023 |
| First Prize, Lanqiao Cup - Provincial (Sichuan) in C/C++ Programming | 2022, 2023 |
| Third Prize, Lanqiao Cup - National Final in C/C++ Programming | 2022, 2023 |
| Third Prize, Group Programming Ladder Tournament - National Final | 2023 |
| First Prize, China Undergraduate Mathematical Contest in Modelling (Sichuan) | 2023 |

## Skills

- Programming Languages: Python, C/C++, MATLAB, LaTeX