# Shuailong Zhu

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## EDUCATION

Master of Computer Science, EPFL (5.54/6) — Sep.2022–present

Bachelor of Electrical Engineering, Zhejiang University (92/100, rank 1/97 in major) — Aug.2018–Jun.2022
- − Honorable Program: Mixed Class, Chu Kochen Honors College
- − GREAT Research Program in 2021 Summer, UC Davis

Algorithm/Machine learning courses: Machine Learning (6/6), Mathematics of Machine Learning (5.25/6), Learning Theory (6/6), Artificial Intelligence[†] (93/100), Advanced Algorithm (5.75/6), Optimization[†] (92/100).

## RESEARCH EXPERIENCE

**Theoretical Aspects of Neural Network Pruning** — Feb.2023-Jun.2023
*Advisor: Prof. Lénaïc Chizat* — *Semester Project, EPFL*

We focus on applying different sampling strategies and optimization techniques on neural network pruning and analyze their performance theoretically and experimentally. Here are the report and slides.

**Disentangled Control for 3D-aware Face Image Generation** — Feb.2022-Jun.2022
*Advisor: Prof. Yiyi Liao* — *Bachelor Thesis, Zhejiang University*

The goal of this project is to obtain more fine-grained control in image synthesis while maintaining view-consistency. With the implicit neural representation (NeRF) allowing for multi-view-consistent rendering, we added a mutual information term by means of InfoGAN to enhance the correlation between synthetic images and the latent control code in unsupervised setting. We also introduced weak supervision from traditional face model parameters and utilized AC-GAN for better disentanglement performances.

**Malware Detection based on k-order-Markov Image Construction** — Jun.2021-Aug.2021
*Advisor: Prof. Houman Homayoun* — *GREAT Program, UC Davis*

https://github.com/One-punch24/Malware_Markov_Image-ViT

## WORK EXPERIENCE

**Controllability, Convergence and Stability of Soft Prompt Tuning** — Sep.2021-Feb.2022
*Mentor: Prof. Lingpeng Kong* — *Intern, Shanghai AI Laboratory*

I designed a grouped soft prompt strategy with a recursive Insert-Modify training scheme and an instance -aware prompt injection; I also explored the convergence speed and generalization of parameter-efficient tuning including Fine Tuning, BitFit, Prompt Tuning and Prefix Tuning for both NLG and NLU tasks.

## AWARDS

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|---|---|
| First Class Scholarship of Zhejiang University (top 2/97 in major) | 2020–2021 |
| Cen Kefa Scholarship (top 1/97 in major) | 2019–2020 |
| Government Scholarship of Zhejiang Province (top 2% in Electrical Engineering Division) | 2018–2019 |
| Physics Innovation Competition of Zhejiang Province, First Prize | 2019 |
| National Mathematics Competition for College Students, Second Prize | 2019 |

[†]Courses taken at Zhejiang University are denoted by †.

## Academic Interests

**Machine Learning Theory**
**Controllable Generative Models**

## Programming Skills

python (torch, numpy, transformers(huggingface)), C++, matlab, verilog, html

## Language skills

**TOEFL iBT: 103**

– Reading 28, Listening 25, Speaking 23, Writing 27