Fengting Yuchi

yc1114@sjtu.edu.cn & **fyuchi1@jhu.edu** **VCY019** **Personal Website**

Education

Shanghai Jiao Tong University **August 2022 – Present**

B.Eng in Information Engineering *Shanghai, China*

- GPA: 3.98/4.3), Ranking: 3/130
- National Scholarship 2023 (Top 0.2% nationwide, highest honor in China)

Relevant Coursework until June 2024

- **Math and Physics**: Calculus I & II, Linear Algebra, Probability and Statistics, Mathematical Physics Method in Electronic Engineering, University Physics I & II & III.
- **CS**: Thinking and Methodology in Programming (C++), Data Structure.
- **EE**: Basic Circuit Theory, Digital Electronics, Fundamentals of Analog Circuits, Electromagnetic Field, Embedded System and Interface Technology, Signals and Systems.
- **Lab courses**: Introduction to Engineering, Physics Lab. I & II, Experiments of Circuit Theory, Electronics Laboratory, Science and Technology Innovation I & II, Modeling and Simulation of Engineering Issues.

Publications

Data Quality Control in Federated Instruction-tuning of Large Language Models

Yaxin Du, Rui Ye, Fengting Yuchi, Wanru Zhao, Jingjing Qu, Yanfeng Wang, Siheng Chen.

Under Review, 2024.

Projects

Raw2SFT | *Python (Pytorch)* **July 2024 – Present**

Cooperative Medianet Innovation Center, Shanghai Jiao Tong University *Supervisor: Siheng Chen*

- A large number of structured Question-Answer(QA) pairs are essential for instruction-tuning large language models(LLMs), whereas clients possess extensive unprocessed raw data text.
- Proposed a federated learning framework where a trainable LLM converts unstructured raw text into structured QA pairs. This approach relieves manual effort and maintains clients' privacy.
- Experimental results are forthcoming.

(Killed) FedS2 | *Python (Pytorch)* **January 2024 – February 2024**

Cooperative Medianet Innovation Center, Shanghai Jiao Tong University *Supervisor: Siheng Chen*

- Statistical heterogeneity is one of the most significant challenges in federated learning, making models biased toward local datasets.
- Proposed a modification to the loss function by adding a self-supervised loss term, such as *SimCLR*. This adjustment aims to enhance the generality of the learned feature space in local models.
- Compared to federated learning using traditional loss functions like Cross-Entropy, *FedS2* has not demonstrated remarkable improvements in the conducted CV experiments.

Brain Imaging Data Processing | *Python, MATLAB* **June 2023 – August 2023**

Medical Ultrasound Laboratory, Huazhong University of Science and Technology *Supervisor: Wu Qiu*

- Applied masking and convex optimization with shape propagation to perform *Brain Extraction* on over 1000 stroke patients' *NCCT* and *mCTA* head images.
- Processed a large medical-image dataset including *mCTA, NCCT, CTP, and DWI* scans from stroke patients.
- In the pipeline is the development of a predictor for follow-up infarct areas, using patients' examination data such as *CBF, CBV* and *Tmax*. The predictor aims to help doctors make well-informed decisions on stroke treatment.

(High School) Research on the Challenges of Garbage Sorting in Wuhan **March 2021 – July 2022**

First Prize in Student Research Project of Wuhan Education Science Planning, 2022

- Roles: Team Leader & Report Author & Defense Presenter
- Conducted a comprehensive investigation of the challenges associated with garbage sorting through literature review, questionnaire survey and fieldwork.
- Explored potential solutions to address these challenges and presented recommendations to the government.

Skills

- **Skills:** Python (Pytorch), C/C++, MATLAB, LaTeX, Shell, Assembly Language
- **Languages:** English (TOEFL 111/120), Chinese (Native)

Extracurricular

Music

- ABRSM Grade 8 Piano
- A virtuoso in numerous classical piano recitals at SJTU, delivering professional interpretations.
- An adept piano accompanist collborating with a professional tenor and students' choir in *Chinese Art Song International Singing Competition* and *SJTU 129 Song Festival* respectively.
- An experienced piano teacher at SJTU Piano Association.

Go game

- A 3-dan player

References

- **Siheng Chen**, Associate Professor of Shanghai Jiao Tong University; Co-Principal Investigator, Shanghai Artificial Intelligence Laboratory
- **Wu Qiu**, Professor of Huazhong University of Science and Technology