

# FENGTING YUCHI

✉ yc1114@sjtu.edu.cn    📄 VCY019    📄 Fengting Yuchi    🌐 Fengting Yuchi

## EDUCATION

### Shanghai Jiao Tong University

B.Eng in Information Engineering, GPA: 3.98/4.3, Ranking: 4/132

Expected Jun 2026

### Johns Hopkins University

Exchange Student at Whiting School of Engineering, GPA: 3.8/4.0 (Advisor: **Jason Eisner**)

Aug 2024 - May 2025

## PUBLICATIONS

### LLMs Know More About Numbers than They Can Say

\*Fengting Yuchi, Li Du, Jason Eisner

ARR July, 2025 (Overall Assessment 4/5)

### FedDQC: 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

ACL Findings, 2025 [🔗](#)

### Leveraging Unstructured Text Data for Federated Instruction Tuning of Large Language Models

Rui Ye, Rui Ge, \*Fengting Yuchi, Jingyi Chai, Yanfeng Wang, Siheng Chen

FL@FM-NeurIPS'24 (Oral) [🔗](#)

## EXPERIENCE

### Undergraduate Research Assistant

Feb 2025 - Present

Professor Jason Eisner, Center for Language and Speech Processing, Johns Hopkins University

Baltimore, MD

- Studied why SOTA models fail at cross-notation numerical comparisons (e.g., " $5.7 \times 10^2$  vs 580?") with comprehensive probing and finetuning experiments
- Exploited latent knowledge in LLMs by introducing a probing objective as an auxiliary loss and designing novel probe architectures for fine-tuning on both synthetic and real-world datasets
- First-author paper receiving 4/5 in ARR July, 2025

### Undergraduate Research Assistant

Oct 2023 - Jul 2024

Professor Siheng Chen, Cooperative Medianet Innovation Center, Shanghai Jiao Tong University

Shanghai, China

- Conducted research in federated learning and large language models, including enhancing federated instruction tuning of large language models and exploring federated learning algorithms with self-supervised methods
- Learned techniques such as instruction-tuning of large language models, developing a federated learning framework with large language models, data quality control and self-supervised learning methods
- Contributed to 2 publications and 3 projects

### Undergraduate Research Assistant

Jun 2023 – Aug 2023

Professor Wu Qiu, Medical Ultrasound Laboratory, Huazhong University of Science and Technology

Wuhan, China

- Processed a medical image dataset with 1000+ mCTA, NCCT, CTP and DWI scans from stroke patients and performed brain segmentation on NCCT and mCTA head images
- Learned techniques including masking images, visualizing medical images in ITK-SNAP, parallel computing in Matlab and dataset management
- The processed dataset supported two publications

## PROJECTS

### Natural Language Interface for Surgical Robotic System

Feb 2025 – May 2025

EN.601.456: Computer Integrated Surgery II, Johns Hopkins University [🔗](#)

- Developed a speech-driven natural language interface for navigating a surgical robotic endoscope in nasal procedures
- The system parses high-level spoken commands, plans anatomical paths and visualizes movements in real time
- This work contributes to the broader goal of intuitive, hands-free control in robot-assisted surgery

### Memory-Efficient Transformer for Low-Perplexity Language Modeling


Apr 2025 – May 2025

EN.601.471: NLP: Self-supervised Models, Johns Hopkins University [🔗](#)

- Developed a memory-efficient Transformer with cross-layer sharing and bottleneck MLPs for low-perplexity language modeling
- Achieved competitive perplexity and training efficiency through distillation under 20GB GPU constraints

## RL and LLM-based Route Planning for Bouldering


Nov 2024 – Dec 2024

EN.601.673: Cognitive AI, Johns Hopkins University 

- Formulated bouldering route planning as a Markov Decision Process with limb configurations as states and hold transitions as actions
- Combined reinforcement learning with large language models to evaluate action feasibility, safety, and efficiency using human-like reasoning
- Generated realistic and climbable routes on real-world wall images using value iteration and LLM-guided transition modeling

## PMF for Personalized Movie Recommendation

Nov 2024 – Dec 2024


EN.601.475: Machine Learning, Johns Hopkins University 

- Built a personalized movie recommender using probabilistic matrix factorization on the MovieLens dataset
- Modeled user preferences and item features under a Bayesian framework, enabling robust rating prediction for sparse data
- Improved recommendation precision and recall via partial PMF for cold-start users, outperforming random baselines

## AWARDS

- |   |      |
|---|------|
| • <b>National Scholarship</b> (Top 0.2% nationwide, highest honor in China) | 2023 |
| • <b>Honorary Citizen of Xintai City</b> (Voluntary teaching)               | 2023 |

## SKILLS

- **Programming:** Python (Pytorch), C/C++, MATLAB, Julia (Gen),  $\LaTeX$ , Shell, Git, Assembly Language, LabVIEW
- **Courses:** natural language processing, machine learning, cognitive AI, embedded systems, circuit analysis, signal processing, electromagnetics, communication systems
- **Languages:** English (TOEFL 108/120), Mandarin (Native), Classical Chinese (Advanced Reading and Writing) 

## EXTRACURRICULAR

### Music

- Studied piano performance and chamber music with **Dr. Shirley Yoo** at **Peabody Conservatory**, the first conservatory in the United States.
- A chamber musician delivering several concerts at JHU
- An avid pianist in numerous classical piano recitals at SJTU
- An adept piano accompanist collaborating with a professional tenor and students' choir in *Chinese Art Song International Singing Competition* and *SJTU 12.9 Song Festival* respectively
- An experienced piano teacher at SJTU Piano Association

### Go game

- A 3-dan player

## REFERENCES

- **Jason Eisner**, Professor of CS at Johns Hopkins University; ACL Fellow
- **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
- **Shirley Yoo**, Faculty of chamber music at Peabody Conservatory of Johns Hopkins University