FENGTING YUCHI

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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., "5.7×10^2 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

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

- **National Scholarship** (Top 0.2% nationwide, highest honor in China) 2023
- **Honorary Citizen of Xintai City** (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 collborating 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