Zilinghan Li

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Education

University of Illinois at Urbana–Champaign Champaign, IL
Master of Science in Computer Science Aug. 2022 – May. 2024

University of Illinois at Urbana–Champaign Champaign, IL
*Bachelor of Science in Computer Engineering (Graduation with **Highest** Honor)* | GPA: 3.89 / 4.0 Sep. 2018 – May. 2022

Zhejiang University Hangzhou, China
Bachelor of Engineering in Electronic and Computer Engineering | GPA: 3.97 / 4.0 Sep. 2018 – Jun. 2022

• Selected Honors: UIUC Highest Honor at Graduation (2022), Outstanding Graduate of Zhejiang Province (4%, 2022), National Scholarship ($< 1\%$, 2019), Provincial Government Scholarship of Zhejiang Province (3%, 2021).

• Teaching Assistant: Artificial Intelligence (2022), Introduction to Computing (2021, 2022), Calculus III (2020).

Publications

• Yuan X.*, **Li Z.***, Wang G. ActiveMatch: End-to-end Semi-supervised Active Representation Learning. Accepted by *IEEE International Conference on Image Processing (ICIP) 2022*. (*: equal contributions) **[Paper]**

• **Li Z.**, He S., Du Y., González S., Schewe KD. Unbounded Barrier-Synchronized Concurrent ASMs for Effective MapReduce Processing on Streams. In *Rigorous State-Based Methods. ABZ 2021.* **[Paper]**

Selected Projects and Research

Video Character Tracker | ***Python*** Champaign, IL, Oct. 2021 - Jun. 2022

• Proposed a semi-supervised learning method with triplet loss to achieve ~**98%** face recognition accuracy by using two face images per person.

• Designed a video character tracker to return character appearing time slots by combining the semi-supervised face recognizer and multi-human tracker, which reaches ~**80%** intersection-over-union accuracy on collected datasets.

End-to-end Semi-supervised Active Representation Learning | ***Python*** Haining, China, Jun. 2021 - Feb. 2022

• Proposed a semi-supervised learning (SSL) method by combining SSL, contrastive learning, and active learning.

• Solved the drawbacks of current SSL methods such as ambiguous representations for inter-class samples, sensitivity to initialization, and inconvenience in building labeled sets.

• Reached **state-of-the-art** performance on SSL image classification benchmarks CIFAR-10 (**1%**~**2%** improvement) and CIFAR-100 (**4%** improvement).

Ebook Service and Management System | ***Spring Boot & Vue*** Champaign, IL, Sep. 2021 - Dec. 2021

• Developed a web page which displays the contents of **1000+** ebooks according to the two-level category.

• Set up ebook management web pages to access and modify the database from the front-end.

• Implemented a login interface for administrators to access the management pages and modify the database safely.

TCP Protocol from Scratch | ***C*** Champaign, IL, Oct. 2021 - Nov. 2021

• Implemented the TCP protocol based on UDP's sendto and recvfr **to** ransmit gigabyte data reliably.

• Realized congestion avoidance and fast recovery features of the TCP protocol.

• Utilized at least **70%** of bandwidth in a steady state without competing traffic.

GAN-based Missing Data Imputation Toolbox | ***Python*** Hangzhou, China, Jun. 2021 - Sep. 2021

• Proposed an improved generative adversarial network (GAN) based missing data imputation method, which speeded up the model training by **7.5x** on average, and embedded the model into a GUI toolbox.

• Employed pagination to decrease the time for opening large files with millions of items to less than 5 seconds.

• Supported more than 10 data pre-processing methods and 2 post-analysis methods in the toolbox.

Linux-like Operating System Supporting Multiple Terminals | ***C, x86-Assembly*** Remote, Mar. 2021 - May. 2021

• Developed an operating system with three students from scratch, including OS functionalities such as basic device supports, interrupt handlers, system calls, dynamic memory allocation and writable file system.

• Implemented a round-robin scheduler to support three terminals running at the same time.

Skills

Programming Languages: Python, C++, C, Java, System Verilog, MATLAB, SQL
Tools: PyTorch, Spring Boot, Vue, Git, CUDA, LaTeX
Relevant Coursework: Database Systems, Distributed Systems, Computer Systems Engineering, Communication Networks, Artificial Intelligence, Applied Parallel Programming, Introduction to Algorithms, Data Structures