

Ruipeng (Ray) Han

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EDUCATION

University of Illinois Urbana-Champaign
Master of Computer Science (MCS)

Expected Dec 2024
GPA: 3.93/4.0

University of Illinois Urbana-Champaign
B.S. with Highest Distinction in Math and Computer Science
B.S. with Highest Distinction in Statistics

Aug 2019 - May 2023
GPA: 3.95/4.0

Honors: Edmund J James Scholar, Dean's List every semester, Cum Laude

PUBLICATIONS

Large Language Model-Guided Disentangled Belief Representation Learning on Polarized Social Graphs (ICCCN 2024)

Jinning Li, **Ruipeng Han**, Chenkai Sun, Dachun Sun, Ruijie Wang, Jingying Zeng, Yuchen Yan, Hanghang Tong, Tarek Abdelzaher.

TEACHING EXPERIENCE

Graduate Teaching Assistant (Formal Software Development Methods, CS 477)
University of Illinois Urbana-Champaign

Jan 2024 - May 2024
Champaign, IL

- Developed scripts and autograders to automate the grading of homework, attendance records, and regrades requests
- Developed and maintained the course website; managed the administrative tasks of the website and course forums

Graduate Teaching Assistant (Database Systems, CS 411)
University of Illinois Urbana-Champaign

Aug 2023 - Dec 2023
Champaign, IL

- Prepare and develop course materials on MongoDB, Neo4j, database indexing, and transactions, including creating homework, quizzes, exam problems, and designing grading rubrics
- Held daily office hours and guide 13 groups of students on their semester-long full-stack application projects

Course Assistant (Software Design Lab, CS 222)
University of Illinois Urbana-Champaign

Aug. 2022 – May 2023
Champaign, IL

- Supported students during weekly sessions through which they design, build, and maintain web and mobile projects; advising on software development lifecycles and best practices as they relate to software projects
- Implemented and configured robust GitHub CI/CD workflows, streamlining project development by automating building processes, testing, and deployments

Course Assistant (Numerical Analysis, CS 450)
University of Illinois Urbana-Champaign

Aug. 2022 – May 2023
Champaign, IL

- Partnered with instructor and TAs in crafting and delivering engaging course materials, while supporting the continued knowledge and development of students
- Graded homework on topics of linear/non-linear problems, optimizations, and eigenvalue/eigenvectors

RESEARCH EXPERIENCE

Software Research Assistant
Coordinated Science Lab, University of Illinois at Urbana Champaign

Dec 2023 – Present
Champaign, IL

- Developed an automated sentiment analysis pipeline in **Python** to retrieve raw tweets, preprocess data, and perform sentiment analysis and chain-of-thought prompting using **LangChain**, **vllm**, OpenAI GPT-4 API, and **NLTK**
- Implemented and fine-tuned baseline models for classifying tweets, including RoBERTa, TwinBert, and Mixtral models

PROFESSIONAL EXPERIENCE

Software Engineer Intern Pure Storage Inc.

May 2024 – Aug. 2024
Santa Clara, CA

- Incoming Intern

Software Engineer Intern Foxconn Industrial Internet (FII-USA)

May 2022 – Aug. 2022
Mt. Pleasant, WI

- Led the design and development of RESTful APIs using **FastAPIs** to retrieve real-time IoT machine data from the production line, enabling seamless integration with user and client applications and effectively handling 10K+ daily requests
- Developed microservices architectures using **Django-REST framework** that communicated with Microsoft Graph APIs and provided access to Microsoft cloud services, including emails, Teams messages, cloud communications, and search functions

Software Engineer Intern Foxconn Industrial Internet (FII-USA)

May 2021 – Aug. 2021
Mt. Pleasant, WI

- Developed and maintained an ERP web application using **Django** and **React.js** with **PostgreSQL** databases, automating human resources' business workflow and affairs, including form approvals, production planning, document management, etc
- Implemented an admin portal to visualize thousands-scaled sales forms and materials documents, enhancing business analysis
- Implemented health checks and monitoring mechanisms in **HAProxy** to constantly monitor the availability and responsiveness of web servers, automatically routing traffic away from underperforming servers and ensuring 99.999% host uptime

IT Technician Intern Foxconn Technology Group

May 2020 - Aug. 2020
Mt. Pleasant, WI

- Collaborated with system engineers to optimize PostgreSQL replications, load-balancing protocols, and failover performance. Achieved 30% latency reduction, enhancing data sync between primary and standby databases
- Leveraged **GitLab CI/CD** and developed shell scripts to automate deployments, server updates, testings, and database migrations and failovers, enhancing the DevOps cycle and continuous integration efficiency under Linux OS.

TECHNICAL SKILLS

Languages: Python, C, C++, Go, C#, Java, JavaScript/TypeScript, R, SQL, Linux Shell, HTML5&CSS

Frameworks: Django, Flask, Java Spring Boot, Node.js, React.js, Next.js, gRPC, FastAPI

Developer Tools: Docker, Git, Gitlab, Github, VMware, GCP, AWS, DigitalOcean, VScode, Rstudio

Databases: PostgreSQL, MongoDB, MySQL, Oracle

PROJECTS

Distributed Machine Learning Computing Scheduler

- Developed a fault-tolerant distributed file system in **Golang** using **gRPC**, enabling efficient file operations such as fetching, deleting, and uploading files while ensuring system reliability.
- Implemented the **Bully Algorithm** for automatic master node election, providing seamless failover capabilities in case of master node failures, ensuring uninterrupted system functionality.
- Designed and implemented a **Round-Robin** style resource scheduler for efficient task allocation among ML models/inference tasks, optimizing resource utilization and ensuring fair distribution of computing resources.

Algorithmic Trading Strategy (semester-long project for the course IE 498 “High Frequency Trading”)

- Designed and implemented a robust C++ parser for NASDAQ TotalView-ITCH 5.0 and IEX DEEP market data, enabling efficient extraction and processing of critical market information.
- Developed a mean-reversion strategy using C++ in Strategy Studio (RCM-X), leveraging statistical analysis and algorithmic trading techniques to identify and exploit market inefficiencies.
- Tuned strategy parameters and backtested on 2022 April's data, yielding pnl rate 90% on AAPL and 50% on SPY

RELEVANT COURSEWORK

System & Network: Distributed System, Database System, System Programming, Compilers, IoTs, Networks

ML & DL: Machine Learning, Artificial Intelligence, Deep Learning, Statistical Modelling, NLP

Math & Analysis: Numerical Analysis, Linear Algebra, Differential Equations, Real Analysis, Abstract Algebra, Algorithms, Statistical Programming Methods, Data Structure, Probability Theory, Formal Method for Software Verification, Data Management