Ziheng (Jack) Chen

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First-year Master's student seeking a summer internship in software engineering and related fields for 2024

Education

University of Illinois Urbana-Champaign	Aug 2023 – May 2025
Master of Science in Computer Engineering	GPA: - /4.0
University of Illinois Urbana-Champaign	Aug 2019 – May 2023
Bachelor of Science in Computer Engineering, Minor in Mathematics	GPA: 3.99/4.0 (Highest Honor)

Relevant Coursework Dependable AI Systems, Machine Learning, Communication Networks, Data Science Analytics

Experience

Software Engineer Intern (co-op), StoneX Group – Chicago, IL · Jan 2023 – June 2023
- Developed an evaluation pipeline in `Python` to efficiently back-test the performance of commodity price indices
- Suggested adjustable parameters (rolling, rebalancing strategies) and calculated potential loss
- The best-performing index outperformed SPGCCI by 23.3% and 8.8% in 10-year total return and Sharpe Ratio
- Created a `Python` script for `CI/CD` to automatically migrate workflows in `Databricks` to production environments

Data Engineer Intern (full-time), StoneX Group – Chicago, IL · Aug 2022 – Dec 2022
- Integrated user authentication provided by `Okta` using `Envoy` for an existing internal web application
- Streamlined data curation pipeline in the above web application and reduced waiting time to 5 seconds
- Built a dashboard in `Splunk` to show the usage of the above web application filtered by associates and categories

Graduate Teaching Assistant (co-op), University of Illinois Urbana-Champaign · Aug 2023 – Present
- Lead semiweekly discussions to review concepts and solve worksheets for CS/ECE 374: Intro to Algorithms
- Host weekly office hours to provide clarifications and provide homework guidance

Data Engineer Intern (full-time), Ecolab – Saint Paul, MN · May 2022 – Aug 2022
- Profiled global sales history table in `Snowflake` and provided key statistics on the quality and usability of tables
- Automated generating `SQL` queries using `Python` and `RestAPIs` to extract key statistics from sales history

Projects

Watch Out for the Safety-Threatening Actors: Proactively Mitigating Safety Hazards, *Autonomous Vehicles*
- Tuned sampling parameters to sample reachable points of a vehicle following the bicycle model
- Improved the area calculation using `alphashape` in `Python` to reduce running time from 2 minutes to 0.4 seconds
- Integrated the calculation method to the current pipeline in `CARLA` simulator to assign risk to vehicles per frame

Addressing the Insufficiencies in CARLA Simulator, *Autonomous Vehicles*
- Researched potential unrealistic vehicle behavior in rare cases in `CARLA` simulator
- Improved the friction model of vehicles as a function of weather according to previous literature in `CARLA`
- Generated and analyzed over 8,000 vehicle traces in varying rainy conditions, creating up to 66% more accidents

GymLog, *Web Application*
- Designed a responsive web application for logging workout sessions using `React.js` in `TypeScript`
- Created backend database using `MongoDB` and `Mongoose` and connected to the frontend hosted by `Heroku`

Coffee4Life OS, *Linux System Kernel*
- Implemented a functioning 32-bit `Linux` kernel in `C` and `x86`
- The kernel supported paging, RTC, keyboard, terminal, file system, system calls, context switching, and scheduling

OpenFlights, *Data Structures*
- Designed data structures to host flight data with 8,000+ airports and 67,000+ routes in `C++`
- Implemented Landmark, PageRank, and Dijkstra's algorithms to search for possible paths with routing options

Skills

Programming Languages	`Python, C, C++, JavaScript, TypeScript, SQL, x86, CUDA, SystemVerilog`
Frameworks and Tools	`Git, Linux, Docker, React.js, pandas, PyTorch, NumPy, Matplotlib`