Ziheng Chen

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Education

University of Illinois Urbana-Champaign (UIUC) Aug 2023 – Expected May 2025
Master of Science in Computer Engineering GPA: 4.0/4.0

University of Illinois Urbana-Champaign (UIUC) Aug 2019 – May 2023
Bachelor of Science in Computer Engineering (Highest Honor), Minor in Mathematics GPA: 3.9/4.0

Experience

Software Engineer Intern, StoneX Group – Chicago, IL Jan 2023 – June 2023

- Designed and developed an evaluation pipeline with `pandas` to benchmark developmental commodity indices, which are market derivatives, using historical prices and paving the way for their potential market release as a product
- Analyzed the profitability of commodity indices generated from 200+ expert-provided index configurations, surpassing performance targets by 23.3% in 10-year total return with the highest-performing index
- Collaborated closely with marketing associates to validate index generation methods and refine evaluation criteria
- Accelerated benchmarking in `Databricks` by optimizing and parallelizing processes, slashing waiting time by 3,000%
- Created a `Python` script for `CI/CD` in `Azure DevOps`, automating `Databricks` workflow migration across environments, rigorously testing intricate logic to effectively handle edge cases and replace manual operations

Data Engineer Intern, StoneX Group – Chicago, IL Aug 2022 – Dec 2022

- Deployed a proxy microservice to integrate company-wide `Okta` authentication into an existing cloud application
- Optimized the data curation ETL pipeline for a data-serving application to cut loading time by 20 times to 5 seconds
- Developed a dynamic usage analysis dashboard in `Splunk`, showing associate usage and category-specific insights
- Utilized Docker and agile methodologies to ensure flexibility and adaptability throughout the entire project lifecycle

Data Engineer Intern, Ecolab – Saint Paul, MN May 2022 – Aug 2022

- Profiled global sales history table in `Snowflake`, identifying 201M invalid rows to enhance data integrity
- Automated `SQL` query generation through `Python` and `APIs` to streamline the evaluation of data quality and usability

Projects

Traffic Risk Assessment and Mitigation – Autonomous Vehicles, Safety, End-to-end Aug 2023 – Dec 2023

- Calculated the reach-tube of a vehicle utilizing `alphashape` in `Python` following the bicycle model to identify risky vehicles in traffic and introduced methods to enhance the dependability of AVs in out-of-distribution scenarios
- Verified the method using 30,000+ simulated trials in the `CARLA Simulator` and the `Argoverse` real-world dataset
- Boosted testing efficiency by 200% using `subprocess` in `python`, optimizing the simulation data generation pipeline
- Constructed 6,000 unfamiliar scenarios from NHTSA pre-crash typologies and trained lightweight Reinforcement Learning Agents in `PyTorch` to preemptively brake using the traffic risk as an indicator, reducing accidents by 72.7%

Friction Model Improvement in CARLA Simulator – Autonomous Vehicles, Simulation Sept 2022 – May 2023

- Studied the physics implemented in `CARLA` and improved the friction model as a function of weather settings
- Generated and analyzed 8,000+ vehicle traces in varying weather conditions, creating 300% more accidents
- Acquired expertise in modifying the perception, control, and planning modules in the `CARLA` simulation platform

Coffee4Life OS – Linux System Kernel, System Programming, Operating Systems Mar 2022 – May 2022

- Developed a functional 32-bit `Linux` kernel in `C` and low-level `x86 Assembly`
- Supported paging, RTC, keyboard, terminal, file system, system calls, context switching, and scheduling operations

Skills

Programming Languages `Python, C++, C, GO, SQL, JavaScript, TypeScript, Bash, Assembly, CUDA`
Technologies and Skills `Git, Linux, Docker, Azure DevOps, pandas, PyTorch, TCP, IP, Ethernet`