

## EDUCATION

---

### University of Illinois Urbana-Champaign (UIUC)

*B.S. in Computer Science — Grainger College of Engineering*

May 2026

**Relevant Coursework:** Data Structures & Algorithms, Database Systems, System Programming, Distributed Systems, Applied Parallel Programming, Artificial Intelligence, Principles of Safe Autonomy, Algorithms & Models of Computation, Computer Architecture, Software Design, Probability & Statistics, Numerical Methods, Discrete Structures, Linear Algebra with Computational Applications

## EXPERIENCE

---

### CME Group — Chicago, IL

*Project Lead/Software Engineer Intern*

March 2024 - August 2024

- Developed a **Java-based liquidity injector** application to provide real-time data for client trade simulation and algorithm testing, utilizing **Simple Binary Encoding (SBE)** and a **Kafka endpoint** for efficient data transmission
- Built an internal graph tool using **JavaScript** and **TypeScript** and testing with **JUnit**, allowing users to navigate and manage dependency and architectural component connectivity, increasing employee effectiveness and productivity
- Earned **second place** in a company-wide \$1000 CodeUp Hackathon by developing and implementing an optimal **Bollinger Bands trading algorithm** in **Java**, achieving high profit margins with low risk

### Formally Certified Automation and Learning Research Group — Champaign, IL

*Computer Vision/Machine Learning Research Intern*

August 2023 – Present

- Investigate training-time methods including **contrastive self-supervised learning**, **histogram equalization**, and **multiscale architectures** to enhance image classifier robustness against common corruptions under guidance of Professor Gagandeep Singh
- Tested and evaluated **Image Joint Embedding Predictive Architecture (I-JEPA)** AI model using **PyTorch** on the ImageNet dataset, specifically comparing its performance against traditional **supervised learning models**
- Designed and employed a **custom evaluation framework** to assess model robustness, involving the creation of diverse test scenarios with both real-world and synthetic image distortions, aimed at identifying model vulnerabilities

### Lavner Education — Chicago, IL

*Software Engineer Intern*

June 2023 – August 2023

- Developed and implemented **C++ and SQL system solutions**, optimizing the customer payment experience and increasing efficiency by **35%**, resulting in a **20%** reduction in customer payment errors
- Assisted senior employees in deploying a **Django based web interface** in order to increase data accessibility for the remote team and allow for more convenient access to viewing and inputting information

### Illinois Space Society — Champaign, IL

*Software Engineer*

January 2023 – December 2023

- Developing **Python scripts** to automate the parsing of binary log files from flight data, enabling seamless integration with the flight log files database and facilitating users to visualize multiple graphs concurrently on a single screen
- Implementing an **MQTT message transport protocol** to enable efficient real-time data exchange for devices with limited network bandwidth; reducing **data transmission latency by 30%** and improving overall system performance
- Deployed an **ESP32-based** access point to empower multiple users with real-time access to ground station data such as **telemetry and control information** on users' phones

## PROJECTS

---

### Forward Pass Convolutional Neural Networks Optimizer

January 2024 – May 2024

- Implemented and optimized a high-performance **neural-network convolutional layer forward pass** using **CUDA** by utilizing **streams**, matrix unrolling, shared memory, **tensor cores**, and atomic operations
- Analyzed and fine-tuned **CUDA kernels** for optimal performance using profiling tools like **Nsight Systems** and **Nsight-Compute**, identifying bottlenecks and enhancing execution efficiency

### Stock Market Price Predictor

August 2022 – December 2022

- Produced **three different machine learning models** (linear regression, time series forecasting: Facebook Prophet and ARIMA) using **Python** to determine the optimal machine learning model predictor of Google's stock price during a specific time frame
- Proposed a conclusion that the ARIMA model was the best Google stock price predictor with an accuracy of **83%**

## SKILLS

---

**Languages:** Python, C++, C, Java, JavaScript, SQL, Rust

**Tools:** React, CUDA, Google Cloud Platform, Apache Kafka, Spring Boot, PyTorch, Cucumber, Git, Node.js, Pandas, NumPy, Django, MongoDB, Docker, Confluence

**Interests:** Software Development, Front-End Development, Back-End Development, Product Management, Consulting, Quantitative Trading, Finance and Economics, AI/ML, Computer Vision, Chess