JACOB MONDORA

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EDUCATION

Northwestern University   *Evanston, IL | Expected Jun 2026*

- B.S. **Computer Engineering**, *Minor in* **Machine Learning and Data Science**
- **Relevant Coursework:** Computer Architecture, ASIC and FPGA Design, Design Automation in VLSI, Computer System Software, Circuits, Advanced Digital Design, Electronics, Data Structures & Algorithms
- **Involvement & Leadership:** IEEE Technical Program, McCormick Student Advisory Board, Theta Tau (Development Chair, Professional Engineering Fraternity – Interest Group), Robotics Club

WORK EXPERIENCE

Huntington Securities, Inc., *Trading Systems & Analytics Intern*   *Chicago, IL | Jun 2025 - Sep 2025*

- Deployed an automated ETL pipeline (Python, SQL, AWS) that parsed and validated 700+ vendor data files, standardizing position and account datasets for downstream analytics, and reduced processing time by over 95%.
- Architected daily capital & P/L dashboard consolidating broker-dealer market values, capital usage, and pipeline impact, eliminating the need for multi-source manual reporting.
- Engineered Bloomberg EAP ingestion: developed OAuth2-authenticated pipeline for catalog request submission and SSE event listening, automating retrieval of market data for quantitative capital analysis.

Quantinuum, *Data Visualization Engineering Intern*   *Broomfield, CO | Jun 2024 - Sep 2024*

- Analyzed 12+ key quantum system metrics using Python and statistical modeling to identify factors affecting quantum computing performance, enabling physicists and engineers to make data-driven optimization decisions.
- Developed a dataset of 10,000+ synthetic and lab-generated laser beam images to cover alignment edge cases for training computer vision models.
- Deployed a CNN-based image processing tool (Python, PyTorch/TensorFlow) used to enable the automatic calibration of quantum hardware in a closed-loop system.

Carmel Software, *Project Researcher*   *Virtual Internship | May 2023 - Sep 2023*

- Utilized Building Information Modeling (BIM) software, such as Revit, to develop detailed structural models for fire-safety analysis
- Applied fire-safety software, including FDS, Pyrosim, and Pathfinder, to execute simulations and conduct analyses to enhance fire-safety measures.

PROJECTS & OTHER EXPERIENCE

Routability-Driven Placement Optimization

- Implemented algorithms (heuristic, Lloyd's, simulated annealing) to redistribute cells based on tile-level density from LEF/DEF data, improving uniformity and reducing peak congestion in VLSI layouts by up to 35%.
- Used OpenROAD to automate placement refinement and generate heatmaps for statistical evaluation across multiple technology nodes (Sky130hd, Nangate45, ASAP7).

Amazon Recommendation System

- Leveraged dataset to build Rank-based, Similarity-based, and Matrix Factorization-based recommendation systems in Python to recommend Amazon products to customers based on previous ratings.
- Optimized model hyperparameters & compared performance using various metrics (RMSE, Precision, Recall, F score).

CTECs Assistant – AI Chatbot for Course Evaluations

- Built AI chatbot for querying Northwestern course evaluations (CTECs), enabling real-time responses from natural language queries.
- Designed an embedding pipeline for 10938 student essay evaluations across 454 different NU courses, storing vectors in AWS RDS.
- Automated parsing and integration of course metadata into a database with user-specific features like chat history,

SKILLS

Software: Python, Java, C++, SQL, MATLAB, AWS, Machine Learning, OpenROAD, Building Information Modeling (BIM)
Hardware Design: Digital Logic, FPGA and ASIC Design, Circuits, Verilog, VHDL, VLSI Design