Max P. Johnson

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EDUCATION

University of Notre Dame — Notre Dame, IN
Majors: B.S. in Computer Engineering and Mathematics — May 2026
Honors & Achievements: Dean's List, Intramural Indoor Soccer Champion 2023, Grand Challenges Scholars Program — GPA: 3.92

EXPERIENCE

DM² Lab (Dr. Meng Jiang) – University of Notre Dame — Notre Dame, IN
Research Assistant — Aug. 2025-Present

- Collaborating with a PhD student on a first-of-its-kind LLM with decentralized RAG, using blockchain to track source reliability

Coinbase — San Francisco, CA
Software Engineer Intern — May 2025-Aug. 2025

- Backend with the International Exchange team—provides perpetual futures products—and focusing on post order flow
- Built a comprehensive gRPC E2E testing framework that prevented an estimated $10k in customer impact (within days of deployment) and accelerated feature testing by over 99.9% (700x), improving platform stability and development efficiency
- Migrated the INTX API to a service mesh, reducing downtime by 15% and optimizing AWS ingress networking
- Developed an AI agent leveraging LangGraph to crawl git branches and systematically update README documentation

Outerlands Capital — New York, NY
Quantitative Developer Intern — May 2024-Aug. 2024

- Led development of a mid-frequency statistical arbitrage strategy, significantly outperforming BTC with a Sharpe ratio >5
- Backtested factors for systematic asset investment on complete price, volume, and market cap data over 1475 assets
- Learned the basics of spot and perpetual trading through a lens of risk minimization, time series analysis, and machine learning
- Researched elementary market making algorithms and experimented their use on a variety of assets using HummingBot

Web3Sense — South Bend, IN
Blockchain Trading Intern — Oct. 2023-Aug. 2024

- Initiated a model for systematic trading on X signals in Python using Pandas, NumPy, Statsmodels, and more
- Evaluated and invested in 10 NFT projects based on real-world viability and profitability, achieving over 1.2 Eth in realized PnL
- Developed Python and JS libraries to mint from Ethereum smart contracts, accelerating the NFT acquisition process by over 50x

PROJECTS

HFT Exchange — Present

- Architected and currently developing a high throughput, low-latency asset exchange using C++ for HFT and web customers
- Engineering a distributed architecture using Apache Kafka with distinct gateways (REST/WebSocket and custom TCP/binary)

Chip Design/Verification/Synthesis
Customizable Pixel Filter & Matrix Multiplier for CNNs — Mar. 2025-May 2025

- Designed and verified a customizable pixel filter using SystemC, then synthesized to GDS with TSMC 180 nm standard cells
- Integrated the filter with a tailored matrix multiplier designed in SystemVerilog and synthesized in Intel 16 nm technology
- Both ASIC parts will be fabricated under Apple and Intel sponsored education programs, respectively, during summer 2025

Trading Signal Generator — Oct. 2024-Dec. 2024

- Developed a simplistic ASIC to process asset price data, analyze its trend, and output a trading decision with varying confidence
- Designed, verified, and synthesized with SystemVerilog and Cadence EDA, then fabricated under Apple sponsorship

Smart Sports Sensor — Mar. 2025-May 2025

- Constructed a sensor attachment for racket sports to identify stroke, side, and spin of shots using an Arduino Nano 33 BLE
- Analyzed and tested various model architectures, landing on a lightweight Conv1D, using TensorFlow to build and train
- Optimized the model through pruning and 8-bit quantization with TFLite for real-time inference and low flash usage

LEADERSHIP & ACTIVITIES

Academically Collaborative Engineering Spaces – *Peer Mentor* — Sep. 2025-Present

- Tutor peers in six foundational computer science and engineering courses, clarifying complex concepts in a collaborative setting
- Mentor >20 students per meeting on effective study strategies & problem solving to improve academic coursework performance

Notre Dame Quant Club – *Managing Director* — Sep. 2022-Present

- Establishing the club's quantitative trading portfolio with club funds to provide real trading experience to members
- Introducing students to proprietary trading, market making, and probability through mock trading and lectures
- Led and designed the infrastructure for the club trading competition to model building and active trading

SKILLS & INTERESTS

Skills: Python, C++, C, Go, R, Linux, Git, Assembly (Risc-V, MIPS), Swift/SwiftUI, Cadence EDA, SystemVerilog, SystemC
Interests: Alpine Skiing, Poker, Minnesota Sports (Vikings, Timberwolves), Sudoku, Cooking, Soccer