MICHAEL MASENHEIMER

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EDUCATION & HONORS

The University of Arizona, *Bachelor of Science,* Tucson, AZ Sep 2023 - May 2027
- **Major:** Computer Science; **Minor:** Information Science, Technology, and Arts; **GPA:** 3.75
- **Relevant coursework:** Software Development, Web Development, Data Structures and Algorithms, Computer Organization, Linear Algebra
- **Honors:** Dean's List with Distinction (2 semesters), Arizona Excellence Award

SKILLS

Languages/frameworks: Java, Python, C++, JavaScript, PostgreSQL, Spring Boot, PyTorch, Bash, JUnit
OS & DevOps technologies: Windows, Linux, Docker, Maven, REST APIs, Git, AWS Lightsail, Vercel
Methodologies: Agile development, DevOps practices, Version control workflows

EXPERIENCE

CERN, *Undergraduate Machine Learning Research Assistant,* Tucson, AZ Apr 2025 - Present
- Research **hardware-based ML systems** for the **world's largest particle accelerator**, architecting decision-making pipelines between AI engines and FPGA data processing systems
- Design and deploy **scalable C++ neural networks** with single-buffer pipelining, achieving **~15%** latency reduction and **~6 million event/second throughput**
- Benchmark latency vs. network size through quantization and kernel-level fine-tuning
- Collaborate with postdocs and professors using **Git version control** and iterative development practices

University of Arizona Libraries, *Student Makerspace Worker,* Tucson, AZ Jan 2025 - Present
- Conduct drop-in sessions assisting **~15** students weekly with certifications in 3D printing and CNC machining; provide general technical support for **75+ students per week**
- **Create monthly programming and circuit workshops,** develop a library-wide data pipeline for **100+** daily visitors with Arduino technologies

PROJECTS

MakerThread [Spring Boot, Maven, Spring JPA/Security, PostgreSQL, Docker] Jul 2025 - Oct 2025
- Developed the **backend** of a **full-stack, cloud-based** web application with secure user authentication and **12 RESTful API endpoints** serving **JSON** responses for **CRUD** operations
- Designed a **5-table Postgres** schema and deployed the system using Docker for development and database containerization, while implementing **Maven and Lombok,** improving development time by **~10%**
- Applied **Spring Security** and **token-based authentication** to enhance **security of software**; streamlined collaborative development using **Git,** improving efficiency by **~15%**

Chess Engine and AI [Python, Pygame] Jun 2025 - Aug 2025
- Built a **multithreaded** chess engine with complete move validation; hosted on itch.io
- Constructed an AI opponent using **NegaMax** algorithm **with alpha-beta pruning** and adjustable search depth, reducing node evaluations by **~70%**
- Devised evaluation functions that weigh material and positional scoring, evaluating **~10,000** moves per turn

Music Library and User Management System [Java] Feb 2025 - Mar 2025
- Engineered a **terminal-based** system for managing user accounts/playlists, applying object-oriented principles
- Leveraged **ArrayLists and TreeMaps** for data handling and used **JUnit** to rigorously test code, improving reliability by **15%** and enforcing software testing principles

LEADERSHIP

Computer Science Ambassador, Tucson, AZ Apr 2025 - Present
- **Lead department tours** and outreach events; volunteer at student-development activities
- Curate K–12 workshops, facilitating **hands-on STEM projects** and coding activities
- Support CS student workshops focused on practical **software developmen**t and **critical thinking** skills