Muhammad Khalid

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EDUCATION

University of Iowa — Iowa City, IA
*Accelerated **M.S.** in **Computer Science*** — *Expected Graduation - 2027*

Grinnell College — Grinnell, IA
B.A.** in **Computer Science — *Expected Graduation - 2026*
- Cumulative GPA: 3.7/4.0, In-major GPA: 3.75/4.0, Deans list all semesters
- Selected Coursework: Computational Methods, Software Design & Development, Operating Systems & Parallel Algorithms, Data Structures & Algorithms, Object-Oriented Programming, Linear Algebra

WORK EXPERIENCE

Research Assistant — May 2025 – present
Grinnell College — *Grinnell, IA*
- Engineered a **scalable OCR-LLM benchmarking pipeline** using **async API calls** to **6 mLLMs**, cutting runtime by **70%** on **400+** historical text pages
- Standardized **OCR post-correction** workflow, ensuring reproducibility across **5 team members'** environments
- Evaluated **15+ mLLMs** and identified **top 6** performing models, improving benchmarking accuracy by **15%**

Lead Developer, PioneerMart — January 2025 – present
Grinnell College — *Grinnell, IA*
- Led a **team of 4** to build a **React Native + Django marketplace app**, deploying **20+ full-stack features** with **PostgreSQL**, **Zustand** (state management), **Redis**, and **WebSockets**, used by **300+ students** in **week 1**
- Engineered **production deployment** with **Nginx reverse proxy** and **Daphne** on a **Linux-based** cloud provider, enabling stable real-time functionality and **load balancing**
- Integrated **OTP** auth, **image moderation** (Sightengine API), and secure file storage via **AWS S3**

PROJECTS

LlamaIndex Contribution | *Python, Pytest, Open-Source Software* — July 2025
- Merged PR #19439 in the **LlamaIndex** codebase (**43k+ GitHub stars**) fixing a **triaged bug** in the **llama-dev CLI** test framework, improving developer feedback on Python packages
- Addressed **maintainer feedback** on testing improvements through **code-review** process

MCMC Cipher Cracker | *AWS Lambda, Python, Next.js, TypeScript* — August 2024
- Developed a **web app** to crack substitution ciphers using an **AWS Lambda backend** with a **Next.js** frontend
- Implemented an **MCMC-sampling algorithm** with concurrent **Lambda invocations** & **ChatGPT API**

GPU Sudoku Solver | *C, CUDA* — November 2024
- Leveraged **GPU** parallelization & bit manipulation to solve **1,750,000+** sudoku boards per second
- Utilized **thread synchronization** and **constraint propagation** to validate cells for each board

EXTRACURRICULAR EXPERIENCE

Pioneer Weekend — September 2023
Grinnell College — *Grinnell, IA*
- Designed an **app** to reduce college waste with **automated listings** via the **ChatGPT API**, winning **$900**
- Collaborated w/ a team of **3 developers** to present an **MVP** to a panel of **entrepreneurs** & **college president**

MSA President — August 2024 – present
Grinnell College — *Grinnell, IA*
- Led the Muslim Student Association w/ an **$11000+** annual operating budget and **70+** active student members
- Organized regular events on campus through collaborative initiatives with other organizations

TECHNICAL SKILLS

Languages: Python, JavaScript, TypeScript, C, Java
Frameworks: React, React Native, Next.js, Django, Flask, Expo
Cloud & DevOps: AWS (Certified Solutions Architect), CI/CD, Nginx
Tools: PostgreSQL, Jest, Pytest, Git, GitHub, Zustand (state management), Linux