

# Muhammad Khalid

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## EDUCATION

### University of Iowa

Iowa City, IA

Accelerated *M.S. in Computer Science*

Expected Graduation - 2027

- Accepted into competitive undergraduate to graduate program

### Grinnell College

Grinnell, IA

*B.A. in Computer Science*

Expected Graduation - 2026

- Cumulative GPA: 3.67/4.0, In-major GPA: 3.73/4.0, Deans list Spring 2023 & Fall 2023
- Selected Coursework: Computational Methods, Software Design & Development, Operating Systems & Parallel Algorithms, Data Structures & Algorithms, Object-Oriented Programming, Linear Algebra

## EXPERIENCE

### Research Assistant

May 2024 – Dec 2024

*ELBICA Lab, Grinnell College*

Grinnell, IA

- Developed **python** software to integrate visual and verbal data stored using **distributed representations**
- Implemented **causal inference** models to guide **decision-making** based on analyzed data
- Utilized **OpenCV** to break down parts of 2-D graphs to be used for inference

### Software Developer, Intern

June 2023 – Aug. 2023

*10Pearls*

Karachi, Pakistan

- Developed a full-stack fitness-tracking application using **Flask REST** with **JavaScript** & **PostgreSQL**
- Implemented **Flask authentication** with password hashing for secure user accounts
- Implemented **SQLAlchemy ORM** resulting in **40% less code** & improved query performance

### Computer Science Grader

Sep. 2023 – Dec 2024

*Grinnell College*

Grinnell, IA

- Graded **40+** weekly labs, reading assignments, and projects in **Java** (DSA), **Racket** (Functional Programming)
- Debugged** code written by students, providing **detailed feedback** during weekly meetings

## PROJECTS

### PioneerMart | *React Native, TypeScript, Django, PostgreSQL, Jest*

Jan 2025 – present

- Led a team of **4 developers** to build an **online marketplace app** for Grinnell students using **agile** workflows
- Implemented automated **image/text moderation**, **real-time chat**, **OTP auth**, and **AWS S3** file storage
- Grew to **300+ active users** within **1 week** through campus outreach and rapid iteration

### MCMC Cipher Cracker | *Python, Next.js, Django, Typescript*

August 2024

- Developed a **full-stack** web app to crack substitution ciphers using **Django REST** with **Next.js** as the frontend
- Implemented an **MCMC-sampling algorithm** w/ custom acceptance probability & cipher space exploration
- Integrated a pre-trained **GPT-2 model** & Python's **multiprocessing** library to bypass sampling limitations

## EXTRACURRICULAR EXPERIENCE

### Pioneer Weekend

September 2023

*Grinnell College*

Grinnell, IA

- Designed an **app** to reduce college waste w/ an **automated item listing** feature using 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

Aug. 2024 – present

*Grinnell College*

Grinnell, IA

- Lead the Muslim Student Association w/ an **\$11000+** annual operating budget and **70+** active student members
- Organize regular events on campus through collaborative initiatives w/ other organizations

## TECHNICAL SKILLS

**Proficient:** Python, TypeScript, Next.js, Django, React, Java, R

**Familiar:** PostgreSQL, AWS, Zustand, C, Pandas, Flask, NumPy, OpenCV