Muhammad Khalid

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EXPERIENCE

Research Assistant — May 2024 – Dec 2024
ELBICA Lab, Grinnell College — *Grinnell, IA*
- Develop **python** software to integrate visual and verbal data stored using **distributed representations**
- Implement **causal inference** models to guide **decision-making** based on analyzed data
- Utilize **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
- Created a **PostgreSQL** database & wrote Optimized **SQL** queries to handle user-data effectively

Computer Science Grader — Sep. 2023 – Dec 2024
Grinnell College — *Grinnell, IA*
- Grade **40+** weekly labs, reading assignments, and projects in **Java** (DSA), **Racket** (Functional Programming)
- **Debug** code written by students, providing detailed feedback
- Report student difficulties in weekly meetings to improve teaching methods and course structure

PROJECTS

MCMC Cipher Cracker | *Python, Next.js, Django, Typescript* — August 2024
- Developed a **full-stack** Cipher Cracker using **Django REST** with **Next.js** as the frontend
- Implemented a version of the **Metropolis-Hastings** Algorithm to determine the best reverse cipher

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

EDUCATION

Grinnell College — Grinnell, IA
*Major 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, Operating Systems & Parallel Algorithms, Data Structures and Algorithms, Object-Oriented Programming, Data Science, Linear Algebra

EXTRACURRICULAR EXPERIENCE

Pioneer Weekend — September 2023
Grinnell College — *Grinnell, IA*
- Developed an **app** to **automate** the item listing process for a college-centric **online marketplace**, winning **$900**
- Collaborated with a team of developers to create a **functional prototype**

HackGC — April 2023
Grinnell College — *Grinnell, IA*
- Won **2nd place** at a hackathon focused on using technology to fight climate change
- Designed an **online platform** as an MVP to connect users & restaurants with a team of 4

TECHNICAL SKILLS

Proficient: Python, TypeScript, Next.js, Django, React, C, Java, R
Familiar: PostgreSQL, Pandas, Flask, SQL, NumPy, OpenCV, RShiny