Choudry Abdul Rehman

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EDUCATION

Knox College **Galesburg, IL**
BS, ***Computer Science, Economics****(Double Major) GPA* ***3.98/4.00*** *June 2022*

TECHNICAL SKILLS

- **Languages:** Python, Java, C#, Javascript, C/C++, Chapel, Processing, Perl, Bash (Unix Shell), Assembly
- **Technologies/Skills:** CUDA, JUnit, Java Native Interface, Machine Learning(scikit-learn), Pandas, Jupyter, Mac OS, Linux, Windows, Android, iOS, Unity, Docker, Git, Scrum, Agile
- **Full Stack:** Django, Flask, ASP.NET Core , Postgres, Heroku, React, Vue, BootStrap, HTML, CSS, PHP

EXPERIENCE

NSF - Heterogeneous Parallel Programming **Galesburg, IL**
Undergraduate Research Intern *Summer 2021*

- Revamped allocation algorithm for Java-based Parallel Resource Management Algorithm Simulator**(PReMAS)** to make it more compatible with heterogeneous parallel computing
- Used JNI to offload compute-intensive part of the algorithm and run it native on **GPU using CUDA**. Up to **40 times** speed up against base java version and **2.5** times speed up against original allocator
- Wrote JUnit test cases to test allocations for both 2 dimensional and 3 dimensional allocation

Knox College, Communications Department **Galesburg, IL**
Assistant Web Developer *October 2020 – Present*

- Made a dynamic signature generator web application using **Javascript, HTML and CSS**
- Developed **React.js** based front-end faculty search engine, significantly improving lookup times
- Designed a Content Management System for easy access to dynamic assets for the website. **.Net Core**, along with React.js and **front-end routing** resulting in up to **4 times** faster navigation/lookup. Used **Bootstrap** for UI

David Bunde, Knox College
Research Intern, Shared memory - Heterogeneous Parallel Computing *Summer 2020*

- Wrote C code to compare performance between **GPU and CPU for SIMD** problems, up to **40 times** speedup on GPU
- Developed code/instructions for Tiled Matrix Multiplication using **CUDA shared memory**. **400% faster** than naive implementation
- Created tutorial for Chapel Programming Language. Use of **Locales in Chapel** was primary focus
- Created oil painting application using **Pixel Binning**. Wrote parallel CUDA version, up to **20 times** speedup compared to serial
- Drafted a tutorial on how to use CUDA C on Google Colab and remote cluster

Plan9 - Tech Startup Incubator **Lahore, Pakistan**
Software Engineering Intern *Summer 2019*

- Designed user-interface using C++ for gesture-controlled wheel-chair
- Revamped the startup's webpage using Javascript and HTML, which led to 50% traffic increase

PROJECTS

Prairie Fire *March 2021 - June 2021*

- Made a survey management system using **Django** and **React**. A versatile **Postgres** based data model to store *Instructor, Researcher and Participant* data along with survey info
- Google **Auth2.0** for secure log-in and access. Deployed using **Heroku** servers(https://prairie-sona.herokuapp.com/)

Brain Racer *Jan 2021 - March 2021*

- Made an educational racing game using **Unity and C#** that helps you sharpen your math/language skills while multi-tasking
- Wrote scripts for audio/visual effects and game mechanism such as infinite road, scoring/penalty model(lnkd.in/gTjY-Hb)

where2apply.com *June 2020 – August 2020*

- Made a college recommendation web application, a predictive model for best-fit colleges for users using **ML(scikit-learn)**
- Used Python Regex to web-scrape accepted applicants' subjective credentials. Created a custom dataframe using Pandas for 200% faster access to university admission statistics. React front-end and Flask back-end deployed using Heroku

Star Clock *May 2020 – June 2020*

- Created a C program to find time using night sky pictures taken from mobile. Used **CUDA C** for **10 times faster** isolation of star pixels, noise cancellation, and false star identification than serial version.
- Used modified DFS for accurate star midpoints. Implemented triangle algorithm from Lost in Space model for constellation identification

COVID Simulator *March 2020*

- Designed a simulator using Processing. Created a graphic interface for user convenience. Added features like mask, levels of social distancing and spread rate

ADDITIONAL

- **Computer Science Tutor** – Helped students learn Java and basic Data Structures and Algorithms at Knox College, Galesburg, IL
- Ranked 3rd in **CCSC MW Programming Competition 2020**
- **International Ambassador** - Knox College. Support for International Students. Organized community building events and workshops
- Nominated for **Sigma Xi**, The Scientific Research Society