

# Jaiaid Mobin

GRADUATE RESEARCH ASSISTANT

Rochester, NY, USA

☎ +15859106251 | ✉ jm5071@rit.edu | 🌐 <https://github.com/Jaiaid> | 🏠 <https://scholar.google.com/citations?user=ifmzYdsAAAAJ> | in <https://www.linkedin.com/in/jaiaid-m-9913ba135>

## Summary

I am looking for Summer, 2023 (availability from 05/16/2023 to 08/18/2023) internship. I am interested in getting opportunities to get more hands-on experience in developing in Linux environment using C++, Python, Bash.

## Education

### Rochester Institute of Technology

PH.D. IN COMPUTER SCIENCE

Rochester, NY, USA

August, 2022 - Present

- **Research Topic** — High performance computing, distributed computing

### Bangladesh University of Engineering and Technology

M.SC. IN COMPUTER SCIENCE

Dhaka, Bangladesh

August, 2022

- **Thesis Title** — Transit Network Design For Evacuation Modeling Using Heuristic and Multi-Objective Optimization Based Approaches

### Bangladesh University of Engineering and Technology

B.SC. IN COMPUTER SCIENCE

Dhaka, Bangladesh

September, 2017

## Experience

### BJIT Ltd - Offshore Software Development Company

SENIOR SOFTWARE ENGINEER

House-7, Road-2/C, Block-J,

Baridhara, Dhaka

November 2020 - April 2022

- Representative of small (<5 member) team to client
- Collaborate with software architect to come up with system design

### BJIT Ltd - Offshore Software Development Company

SOFTWARE ENGINEER

House-7, Road-2/C, Block-J,

Baridhara, Dhaka

July 2018 - October 2020

- Reviewed client expectations and project parameters and suggested software packages that met requirements.

## Professional Project Experience

### Device Interfacing Software Improvement

- Contributed to build and solve issues in building a codebase in **MSVC2019** which is earlier built using **MSVC2012** and clear documentation was not available
- Fixed bug in **C#** codebase and implemented a small feature

### Virtual Background Feature Implement

- Used google **mediapipe sdk** to implement library to remove background, add background, blur background (provided as static library for Windows)
- Library is developed using **C++ (MSVC2017)** for 64bit platform, library using **mediapipe SDK** is partially built using **Bazel** build system.
- Resolved some build issues to build **mediapipe** code using **MSVC2017** (github provided version with necessary feature can be built only by MSVC2019)

### Directshow Source Filter Development

- Repurposed code from existing MIT licensed project to create a source filter
- Analyzed requirement of our project and capabilities of directshow source filter to report what is feasible and accordingly influenced application architecture
- Implemented simple IPC mechanism to facilitate communication between COM component and application
- Worked on application backend to interface with custom source filter using **C++ (MSVC++14)** and **C#(.NET 4.7)**

### Device Control Based on Computer Vision

- Developed Windows application using **C++/CLR** and VS2015
- Developed simple custom solutions based on computer vision algorithms using **OpenCV** API to do particular object presence detection for application use case scenario and showed their effectiveness using client provided dataset
- Implemented object detection system in **C++** using **OpenVINO** sdk for **Windows10** based application
- Implemented relay control over tcp in **C++** using windows networking library and knowledge from the relay documentation

### Smartphone User Detection

- Collected Data and trained machine learning model inspired from a given paper in **Python3.6** using **numpy**, **scikit-learn** package
- Implemented simple communication over http protocol locally to connect front end code and backend ml inference using **flask**, **json** package

### Content Based http/https Traffic Filtering

- Implemented local cache in **C++** using **sqlite** library in **Windows** client PC(**Windows10**) application
- User can selectively filter categories of content
- Written simple **javascript** for browser based control panel of client PC application

## Used Tools

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	<b>Languages</b>	Python3, C++, C, Bash, C#, SQL, x86 Assembly(fasm), Java
<b>Machine Learning/Vision Development Tools</b>		OpenCV, Scikit-learn, Keras, PyTorch
	<b>DBMS</b>	MySQL, SQLite, PostgreSQL
	<b>Build system</b>	Make, CMake, Bazel
	<b>Cloud Environment</b>	GCP
	<b>Hypervisor system</b>	VirtualBox, Linux KVM
	<b>Container management system</b>	Docker
	<b>Mobile Platform SDK</b>	Android ( <a href="https://play.google.com/store/apps/developer?id=BitpatternWeaver">https://play.google.com/store/apps/developer?id=BitpatternWeaver</a> )
	<b>WebFrameworks</b>	Laravel, Codeigniter

## Selected Publications

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### Towards Data Gravity and Compliance Aware Distributed Deep Learning on Hybrid Clouds

*Workshop on Data Fabric for Hybrid Clouds*

WORKSHOP ARTICLE

2022

- <https://hipc.org/wdfhc/>

### Efficient association mapping from k-mers—an application in finding sex-specific sequences

*Plos One*

JOURNAL ARTICLE

2021

- <https://doi.org/10.1371/journal.pone.0245058>

### A heuristic aided Stochastic Beam Search algorithm for solving the transit network design problem

*Swarm and Evolutionary Computation*

JOURNAL ARTICLE

2019

- <https://doi.org/10.1016/j.swevo.2019.02.007>

## Achievements

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### PART OF BRICKHACK 9 BEST HEALTH HACK WINNER TEAM

*February, 2023*

- RIT's premiere collegiate hackathon

### ITEE CERTIFICATION

*March, 2018*

- ITEE Level 2, FE Exam
- Organized by IPA, Japan