

Jaiaid Mobin

GRADUATE RESEARCH ASSISTANT

Rochester, NY, USA

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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

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

Rochester, NY, USA

August, 2022 - Present

Bangladesh University of Engineering and Technology

M.Sc. IN COMPUTER SCIENCE

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

Dhaka, Bangladesh

August, 2022

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

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

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

Baridhara, Dhaka

November 2020 - April 2022

BJIT Ltd - Offshore Software Development Company

SOFTWARE ENGINEER

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

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

Baridhara, Dhaka

July 2018 - October 2020

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 a 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 the 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

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

Selected Publications

Towards Data Gravity and Compliance Aware Distributed Deep Learning on Hybrid Clouds	<i>Workshop on Data Fabric for Hybrid Clouds</i>
WORKSHOP ARTICLE	2021
• https://hipc.org/wdfhc/	
Efficient association mapping from k-mers—an application in finding sex-specific sequences	<i>Plos One</i>
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	<i>Swarm and Evolutionary Computation</i>
JOURNAL ARTICLE	2019
• https://doi.org/10.1016/j.swevo.2019.02.007	

Achievements

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	