

Musab Fiqi

Fullstack Developer

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EXPERIENCE

Research Programmer

Jan. 2024 – Dec. 2024

Department of Computer Science & Engineering at OSU

Columbus, OH

- Developed a **WebGPU**-based renderer for efficient visualization of complex datasets through direct volume rendering and ray tracing algorithms, specifically designed for tetrahedral meshes.
- Using the **WebGPU Shading Language** (WGSL), I implemented a sequential mesh traversal algorithm that accumulates color and alpha values to accurately visualize complex, unstructured data.
- Achieved visualization of turbulent airflow around a golf ball.
- Identified performance limitations due to CPU-intensive pre-processing steps; future work will focus on utilizing **WebGPU compute shaders** to offload these steps and enable real-time rendering of larger, more complex datasets.

Associate Software Developer

May. 2023 – Aug. 2023

Department of Food, Agricultural, Biological and Environmental Engineering at Ohio State

Columbus, OH

- Trained a CNN model using **Pytorch** for weed detection using Jetson Nano devices integrated with drones.
- Sped up our data preprocessing pipeline using **Pythons multiprocessing** module to handle large-scale video frame extraction, processing 12TB of data thereby improving model accuracy.
- Ran noise reduction over the processed which helped increase the accuracy of the CNN model by 7% (from 89% to 96%).

Assistant Research Programmer

May. 2022 – July. 2022

National Science Foundation

Columbus, OH

- Developed **JavaScript**-based dynamic study behaviors within the Lioness Labs tool, collaborating with a team to meet research objectives for an NSF-funded study.
- Improved software usability and functionality based on real-time feedback from research teams.

EDUCATION

Master's of Science in Computer Science & Engineering

Columbus, OH

The Ohio State University

Aug. 2023 – Dec. 2024

Bachelor's of Science in Computer Science & Engineering

Columbus, OH

The Ohio State University

Jan. 2020 – May 2023

Associate's of Science

Columbus, OH

Columbus State Community College

Jan. 2018 – Dec. 2019

TECHNICAL SKILLS

Languages: C#, Python, C++, Java, SQL, JavaScript, x86 Assembly, Scheme

Frameworks: React, .NET Framework, Model-View-Controller, JUnit, MonoGame, Makefile

Developer Tools: Visual Studio, Unity, Visual Studio Code, Git, SVN, Linux, Bash, Agile/Scrum

Machine Learning & Data: Convolutional Neural Networks (CNNs), TensorFlow, Pytorch, Scikit-learn

KEY PROJECTS

Spotify Playlist Generator | Python, Elasticsearch, React

Jan. 2023 – April. 2023

- Built a personalized playlist recommendation system, using **Elasticsearch** and **React** for user interaction and algorithmic audio feature analysis.
- Implemented our **custom music recommendation algorithm** which considers various audio features such as danceability, energy, tempo, etc. for music recommendations.

Soccer Ball Object Tracking | Python, OpenCV

April 2023

- Used **mean-shift object tracking** for real-time tracking of soccer balls, implementing computer vision techniques to identify player actions.