

Ritvik Thakur

906-231-5767 | ritvik.thakur04@gmail.com | linkedin.com/in/ritvik-thakur | github.com/Ritz963

EDUCATION

University of Maryland - College Park

College Park, MD

Bachelor of Science in Computer Science, Double Major in Mathematics; GPA: 3.91

May 2026

Relevant Coursework: Intro to Computer Sys., Intro to Data Science, Computer Vision, Discrete Structures, Algorithms, Organization of Programming Languages, Linear Algebra, Calc I, II, III, Differential Equations, OOP

EXPERIENCE

Undergraduate Researcher

August 2023 – Present

Fire @ UMD

College Park, MD

- Crafted a comprehensive **R** script for data analysis, streamlining the examination of 1,000+ lobbying records.
- Implemented **REST API** calls to retrieve and process over 5,000 data records.

Software Engineer Intern

Nov. 2022 – June 2023

Washington Software

Gaithersburg, MD

- Developed a **React Native** essay-writing app with **Firebase** integration, utilizing OpenAI's **GPT API** for resource searching, citations, and comments; managing the full development lifecycle across 3 months.
- Organized Scrum team of 4 members using **Jira**, while also creating **UML** diagrams and flowcharts for projects.

C++ Team Leader

Aug. 2021 – Feb. 2023

Kids for Code

Rockville, MD

- Created curriculum, course materials, and assignments for a Virtual tutoring service targeted at children from the ages of 8 to 12. Service taught courses for **Python**, **C++**, **Java**, and **HTML CSS**.
- Managed the C++ branch and directed 10+ teachers with **1900+** students from 11 different countries.

Summer Intern

July 2021 – Aug. 2022

Nobel Explorers

Remote

- Collaborated within an intern team to develop a professional website for a Pakistani restaurant.
- Designed and delivered comprehensive troubleshooting and internet safety presentations, providing training to **30+** interns and employees, contributing to enhanced cybersecurity awareness.

PROJECTS

Outfit-ID (WIP) | *React, Node.js, Express, Python, Firebase, AWS S3, Bootstrap*

- Designed a full-stack web application with **React.js** frontend and **Node.js/Express** backend.
- Integrated **Firebase** for authentication and **Firestore** for database management to store user-specific datas.
- Utilized **AWS S3** for secure and scalable image storage, ensuring efficient handling of large image uploads.
- Created a **Python** script for background removal using rembg, executed via a child process in Node.js.

Robust Vision System | *Python, Matplotlib, numpy, OpenCV*

- Engineered an **AI-driven** vision system by developing and training a custom **Gaussian Mixture Model (GMM)**, refining **~15** parameters using **Expectation Maximization (EM)** algorithms to achieve **95%** accuracy in segmenting and isolating orange balls from complex image backgrounds.
- Accurately estimated object distance from the camera with a margin of error below **5%**, leveraging **machine learning-based** image analysis techniques and geometric transformations in **OpenCV** and **NumPy**.

Drone Facial Recognition - BitCamp | *Python, React, OpenCV, dlib, Flask*

- Enabled real-time streaming and web interactions for drone video feed achieving a processing latency under 500ms.
- Utilized **OpenCV** for real-time facial detection, landmark analysis and score calculation.
- Came in 3rd in Razzle Dazzle category out of 500+ participants.

Airplane Strike Data Analysis | *Python, NumPy, Pandas, Matplotlib*

- Analyzed a dataset of 200,000+ airplane strike incidents, uncovering key trends and patterns in aircraft damage, frequency, and flight phases.
- Conducted data cleaning and filtering using **Pandas** to isolate specific trends for accurate analysis.

TECHNICAL SKILLS

Languages: C, C++, Java, Javascript, HTML, CSS, Python, Dart, R, OCaml, MIPS Assembly, Bash, Matlab

Frameworks/tools: React, Pyplot, Pandas, NumPy, Firebase, NoSQL, OpenCV, MediaPipe, Flask, Simulink