



# MUHAMMAD ROWAHA

## Software Engineer

CS Student and Software Engineer  
with an interest in Full Stack  
Development

### Contact

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### Education

#### Bachelor of Computer Engineering

**Bilkent University, Ankara**  
Expected 2025

Relevant Coursework:  
Fundamental Structures of  
Computer Science (C++),  
Digital Design (SystemVerilog),  
Computer Organization (MIPS),  
Algorithms & Programming  
(Java)

#### GCE Cambridge A-Levels

**Lahore Grammar School,  
Pakistan**  
2019 - 2021

Relevant Coursework: Physics,  
Mathematics, Chemistry,  
Computer Science

### Honors and Achievements

- High Honor and Honor roll, Bilkent
- Full Merit Scholarship, BSc and ALevels
- Salutatorian, OLevels Program
- GSEA National Maths Contest, 4th Place

## Experience

### LAYERMARK

#### SOFTWARE ENGINEER

April 2023 - Present

Python C++ Boost MFC SQLite IPC Powershell ZeroMQ

- Inherited a MFC/C++ based windows application and responsible for replacing CNKT with Yolov5 while also making various improvements
- Developed a local socket server using Python and connect the application using Boost library's asio package. Also used different IPC's techniques such as NamedPipes and flag files
- Used shell scripting to manage local server lifecycle. Developed configurations using toml that support both user and default configs
- Wrote GUI module extensions using tkinter and new MFC components such as real-time socket server logs (using ZMQ's pub/sub architecture) in the application

#### FRONTEND DEVELOPER

Jan 2023 - April 2023

Python Next.js Electron.js Ant Design Opencv

- Developed cross-platform desktop application using Nextron (Electron.js with Next.js) utilizing page router and integrating modules using Node's child processes
- Developed python modules utilizing opencv for video processing, pdf generations and interacting with a yolov5 model
- Used AntDesign to implement a UI compatible for industrial use and consumed a custom api on top of Node's child processes and websockets to update state in real time

#### FULL STACK DEVELOPER INTERN, OTSIMO

June 2023 - August 2023

Go Typescript gRPC Protobuf MongoDB React.js MUI Redux

- Designed an API with gRPC and Protobuf for a scalable version control system (Archive, Published, Draft) for an existing file-based ticket system: user-specific automated response generation
- Implemented a backend microservice in Go and wrote unit tests using a mock database.
- Implemented a MongoDB interface and used advanced features such as aggregation pipeline, replica sets, and transactions. Also wrote a command-line migration tool between file-based system and new microservice while keeping backwards compatibility
- Used provided designs to implement an admin frontend using React and Material UI, and Redux for global state management. Kept consistent with the previous designs, such as dark and light modes for the new page

## Skills

### PROGRAMMING LANGUAGES

Python | C++ | Go | Javascript/Typescript | Java

### FRONTEND

HTML | CSS | React.js (Next.js) | Ant Design | MUI | Redux | Templating Engines(EJS)

### BACKEND

Node.js (Express.js) | Spring Boot | gRPC | Protobufs | PostgreSQL | MongoDB | RESTful APIs | Postman

### OTHERS

Web Scraping (Selenium) | VCS (Git, Github, Gitlab) | Shell Scripting (Bash, Powershell, Batch files)

## Projects

### MIPS PIPELINED PROCESSOR

SystemVerilog MIPS Basys3 Digital Design

Designed and implemented a canonical MIPS pipelined programmable processor implemented on Basys-3 FPGA Board. The project is akin to a simple virtual machine. Completed as a course project for Digital Design

### NOTES MUSCLE

Java JDBC Swing MySQL Android XML

Built an android application that enabled students at Bilkent to record lectures and access them as text, share or edit them. Completed as a course project for Algorithms and Programming II

### PORTFOLIO

Next.js MUI Framer-Motion Jotai Firebase Vercel

Designed and implemented a portfolio website with Nextjs and MUI components. Built an easily maintainable and scalable system using incremental static generation and Firebase real-time database. Also included features such as responsiveness, in-app pdf viewing, and custom emailing service