



MUHAMMAD ROWAHA

An enthusiastic full-stack software engineer developing solutions for improved efficiency

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Education

BACHELOR OF COMPUTER ENGINEERING

BILKENT UNIVERSITY, ANKARA

Sep 2021

- Relevant Coursework: Operating Systems (**C**, **POSIX**), Database Systems (**SQL**), Object Oriented Software Engineering (**Java**, **UML**), Programming Languages (**Lex**, **Yacc**), Data Structures and Algorithms (**C++**, **Java**), Digital Design and Computer Organization (**SystemVerilog**, **MIPS Assembly**)

- Highlights: High Honor and Honor Roll, Full Merit Scholarship

HIGH SCHOOL DIPLOMA (GCE A-LEVELS)

LAHORE GRAMMAR SCHOOL, LAHORE

Sep 2019 - June 2021

- Coursework: Sciences and Mathematics

- Highlights: 4A*s (4.0 GPA)

Experience

LAYERMARK

SOFTWARE DEVELOPER

April 2023 - Feb 2024

Tech Stack: Typescript/Javascript, Python, Next.js, Electron.js, Node.js

- Developed **user interfaces** with **DevExtreme** and **AntDesign** for web and native applications meeting specific **industrial settings**.

- Developed **Python** modules-**Opencv** video processing, pdf generation, **Yolov5** ai models, and **WebSockets** APIs-for **versatile usage** in different apps.

- Used native **Browser APIs** to develop a **framework agnostic** abstraction over **Tensorflow & ONNX** AI components for use in different projects such as face-recognition and OCR.

- Built in-house library providing **adapters** for **React's component state** to **Bpmn-js XML** generation. Implemented a **plugin** architecture for extending component state's and creating new Bpmn elements.

APPLICATION DEVELOPER

Jan 2023 - April 2023

Tech Stack: C++(w/ Boost), Python, Microsoft Foundation Classes, ZeroMQ

- Responsible for **documenting** and **researching** areas of improvement in an existing **MFC-based app**.

- Replaced a **CNTK-based** AI model with a **Yolov5-based** one, and employed **IPC abstractions**, named pipes, sockets, and process forking, for **seamless** yet **loosely coupled** integration.

- Implemented **TOML**-based app configurations-user specific and default-for more **user-friendly** and **personalized** experience.

- Wrote **GUI** module extensions using **Tkinter**, and integrated **Strategies** (ZMQ, Boost ASIO) for **reusable** and **scalable** Python modules.

FULL STACK DEVELOPER

June 2023 - August 2023

OTSIMO

Tech Stack: Go, Typescript, gRPC, React.js, MongoDB

- Implemented a Go & gRPC **microservice** for migrating an existing **file-based ticket system** to MongoDB.

- Crafted a command-line migration tool for seamless transition while preserving **backward compatibility**.

- Created an admin frontend using React, **MUI**, and Redux, adhering to established designs for a cohesive user experience.

Skills

JAVA

TYPESCRIPT

PYTHON

GOlang

NEXT.js

SPRING

SQL

GIT

DOCKER

REST

gRPC

OBJECT ORIENTED PROGRAMMING

CLEAN ARCHITECTURE

UML

UBUNTU

WINDOWS

Projects

CAMPUS CONNECT

Tech Stack: Java/Spring, Typescript, Next.js, PostgreSQL, Turborepo, MinIO, Docker

- Conducted **requirements elicitation** with **Figma** mockups and **UML** diagrams such as **Activity & Class Diagrams**.

- Developed a **robust, containerized** backend with an object store for media & a **secure** app protected with multiple JWT signing keys and API keys.

- Developed both admin & user apps following best practices of API layers, customs hooks, stage management, & auth

LINKS: [Parent Repository](#), [Backend Repository](#), [Frontend Repository](#).

BILART

Tech Stack: Python, Typescript, Next.js, FastAPI, PostgreSQL

- Developed an app for art enthusiasts to host art auctions, webinars, art wishlists & collections

- The highlight of the project is a basic **custom ORM** for the backend to support triggers, views, aggregations, & models from abstract base classes

LINKS: [Mono Repository](#).

N-CHILDREN TREE ANIMATOR

Tech Stack: Typescript, CSS, Next.js

- Created a **framework agnostic** tree animator with support including drag, zoom, scroll, & snapshot into JSON, with **no third-party libraries**.

LINKS: [Deployment Playground](#), [Repository](#).

Others

SYSTEMS PROGRAMMING

- Developed several systems-level projects on **Ubuntu** with **C & POSIX API** and unit testing with **Criterion**

LINKS: [Simple Redis](#), [Virtual Memory Simulator](#), [Virtual File System](#)

FPGA PROGRAMMING

- Programmed **Basys3** with **SystemVerilog** to run **Finite State Machines**, **MIPS** Pipelined Processor, and a 12-bit programmable processor

LINKS: [12-bit Processor](#), [MIPS Pipelined Processor](#)

LANGUAGE DESIGN

- Designed a minimalist programming language with **BNF & Regex**.

Implemented a lexical analyzer, token generator, & parser for the language with syntax error handling with **Lex & Yacc**

LINKS: [Lex-Parser](#)

NOTES MUSCLE

- Developed an **Android** application to record lectures and access them as text, share or edit them. Highlights of the project is no external third party library, **custom protocol** over TCP sockets, **multithreaded custom server** and an **object store** supporting binary files

LINKS: [Client Application](#), [Server Application](#)