

# Muhammad Usama

BS Software Engineering

Strong interest in embedded systems, IoT, and smart automation. Experienced in working with Arduino, ESP32, and real-time systems involving sensor integration.



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## Education

10/2021 - 07/2025

CGPA : 3.1

### BS Honors in Software Engineering

Capital University of Science and Technology

07/2018 - 07/2020

810/1100

### Pre-Engineering

Punjab College of commerce

11/2016 - 11/2018

912/1100

### Matriculation

Army Public School and College System



## Final Year Project

### Traffic Pulse AI

This project presents a smart traffic management system that leverages real-time vehicle detection to automate and optimize traffic signal control. Using camera feeds and object detection algorithms (like SORT), the system counts vehicles at each intersection and dynamically allocates green signal durations based on traffic density. Communication with ESP32 microcontrollers is established via Wi-Fi sockets, enabling real-time signal control.



## Personal Projects

### Hospital Management System in C++

This project helps the hospital management to manage health and care system.

### Game Development in unity

The purpose of games is to provide fun and engaging experiences for players.

### Website Security Scanner

Develop a tool that automates the process of scanning websites for common security vulnerabilities and generates a detailed report for users.

### Smart Plant Watering System using ESP 8266

The Smart Plant Watering System is an IoT-based project that integrates different sensors and actuators to automate plant care.

## Fire Alarm System with Using Arduino

The system is to automatically detect fire and actively respond to it in order to minimize damage and ensure safety.

## Water Turbidity Monitoring System Using

### Arduino

The system measure and monitor the turbidity (clarity) of water to ensure its quality and safety. Turbidity indicates the presence of suspended particles like dirt, microorganisms, or chemicals that can affect human health and water usability.



## Skills & Competencies

- Web Development (HTML, CSS, JS, Bootstrap)
- Embedded Systems & IOT-Development
- Backend Logic & problem solving
- Some minor skills such as Mat lab, wiring circuit, use of electronic components, PHP etc.



## Work Experience

### Certifications

Introduction to Front-End Development an online non-credit course

Authorized by Meta and offered through Coursera • Jun 2, 2023

Programming with JavaScript an online non-credit course

Authorized by Meta and offered through Coursera • Sep 13, 2023

Programming in Python an online non-credit course

Authorized by Meta and offered through Coursera • Sep 13, 2024



## Achievements and Activities

- Free Blood Camp Social Service Certificate  
Agrivarsity Scout Group, UAF, 05 - 06 Dec 2018
- Social Volunteer Service  
Cust Helping Hand, 13 Sep, 2024