

Mutte Ur Rehman

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Experience

Industrial AI Startup

Paris, France

Co-founder & CTO

May 2024 - Present

- Co-founded a worksite safety AI startup with deployments at tier-1 European industrial customers.
- Designed and built an **edge AI inference pipeline** in C++/Python running on-device with no cloud dependency, achieving real-time risk detection across portable camera hardware.
- Architected a **multi-camera computer vision system** for PPE and zone-intrusion detection, integrating YOLO-based models optimized for low-power edge hardware.
- Led full hardware-software integration: embedded sensor firmware, **PCB-level** design decisions, and autonomous 2-day battery operation with local edge compute.

HyLight

Le Plessis-Pâté, France

Embedded Systems Engineer

June 2024 - Jan 2025

- Led the design and development of custom PCB circuit boards tailored for the unique requirements of hydrogen airships.
- Wrote efficient and reliable code in Python and C/C++ to create and maintain test bench setups, ensuring optimal performance and integration of various components.
- Developed **PX4 drivers in C/C++** to integrate diverse sensors with the Pixhawk flight controller, enhancing functionality and safety of aerial inspection systems.
- Worked closely with a multidisciplinary team to innovate and implement cutting-edge technologies in aerial inspection.

Freelance

Remote

Computer Vision & ML Engineer

July 2021 - May 2024

- Developed and deployed real-time computer vision applications in C++ and Python, leveraging **OpenVINO**, **TensorRT**, and **DeepStream SDK** for optimized inference on edge devices.
- Built multi-camera processing pipelines handling **4+ concurrent streams at 30+ FPS** on NVIDIA Jetson and Intel platforms, using GStreamer and C++ multithreading (STL threads, mutexes).
- Implemented YOLO-based detection pipelines for people counting, QR code detection, and conveyor belt monitoring, with end-to-end model conversion from **PyTorch/ONNX to TensorRT and OpenVINO IR** formats.
- Designed object-oriented C++ (C++11/14/17) architectures with CMake build systems, unit testing, and **CI/CD pipelines using GitHub Actions** and Docker containerization.
- Integrated detection results with client databases and dashboards, delivering production-grade solutions under NDA for industrial and commercial clients.

Prime Smart Systems

Remote

Robotics and Computer Vision Engineer

July 2021 - September 2024

- Developed and deployed computer vision systems using **OpenCV**, Python, and other tools to solve real-world problems in various industries.

ImViA

Le Creusot, France

Robotics & Control Engineer Thesis Intern

Jan 2023 - June 2023

- Developed robust non-linear control for quadcopters and wheeled robots, enabling precise tracking, disturbance resilience, and computer vision integration for real-time autonomy.
- Tested on AR Drone 2.0, DJI Tello Drone, and TurtleBot3.

Z-PARADISE SAS

Staffelfelden, France

Robotics & Control Engineer Intern

June 2022 - Sep 2022

- **Pool Quality Sensor:** Designed PCB and programmed the swimming pool filtration management system using various components ESP32, sensors, & solar power and implemented Z-wave protocol.

Sky High Escape Rooms

Remote

Robotic Software Engineer

Aug 2020 - Oct 2020

- Node-RED escape room program for Raspberry Pi with multiple user inputs, camera feeds, and HDMI/audio output, designed with a specific sequencing algorithm.

Education

MSc in Computer Vision and Robotics (VIBOT), Université de Bourgogne *Le Creusot, France*
2021-23

BE Mechatronics Engineering, Air University *Islamabad, Pakistan*
2015-19

Courses: Advance Linear Algebra | Embedded Systems | Real Time Imaging & Control | ML | DL | Perception | Autonomous Robotics | Controls | Advance Image Processing | Scene Segmentation and Interpretation

Skills

Programming	C/C++ (C++11/14/17, STL), Python, CUDA, CMake, Git, CI/CD (GitHub Actions), Scripting (Bash)
ML & CV	OpenVINO, TensorRT, DeepStream, PyTorch, TensorFlow, ONNX, Model Conversion & Optimization, OpenCV
Software & Tools	Linux, Docker, GStreamer, ROS, Pm2, PyQt, Tkinter, Solidworks, V-Rep, Gazebo
Embedded	Embedded C, Arduino, PLC, ESP32, Pixhawk/PX4, PCB Design

Projects

Multi-Camera Computer Vision Pipeline

Freelance Project (NDA) 2022 - 2024

- Architected a real-time multi-camera system in C++17 using **DeepStream SDK** and **GStreamer**, processing 4+ concurrent video streams at 30+ FPS on NVIDIA Jetson edge devices.
- Implemented model conversion pipeline: **PyTorch** → **ONNX** → **TensorRT** (FP16/INT8), achieving 3x inference speedup with OpenVINO fallback for Intel hardware targets.
- Built **CI/CD with GitHub Actions**, Docker-based deployment, and C++ unit tests using Google Test.

Real-Time Object Detection Framework

Freelance Project (NDA) 2023 - 2024

- Developed a modular **C++17 inference framework** supporting OpenVINO and TensorRT backends with a unified API, enabling seamless deployment across Intel and NVIDIA hardware.
- Applied **OOP design principles**, STL containers, smart pointers, and multithreading for concurrent stream processing.
- Integrated with CMake build system, Git version control, and automated testing pipelines.

YOLOv7 TensorRT Inference Engine

Personal Project — github.com/muttequrashi 2023

- Implemented YOLOv7 inference pipeline in C++/Python optimized for **NVIDIA Jetson** using TensorRT, with CUDA-accelerated pre/post-processing and CMake build system.

Autonomous-Driving Turtlebot3

S3 - Robotics Project (Course Project) Sep 2022 - Jan 2023

- Autonomous driving of a ground differential robot by lane detection in the Autorace Challenge, including a low-light tunnel.
- Utilized computer vision algorithms in Python ROS to perform Lane Detection and autonomously navigate.

QR-Driven Parallel Automation System

Freelance Project May 2020 - Aug 2021

- Designed a PCB with I²C integration and developed concurrent control software for 48 pumps, 32 servo motors, and 16 stepper motors, using QR code scanning and multithreading & multiprocessing for efficient operation.

SnowPlow Robot

Freelance Project Jul 2021 - Sep 2021

- A smart snowplow robot equipped with OpenWeather API for snow monitoring, geofencing-based driveway clearing, RTK GPS path planning, and obstacle avoidance using LIDAR.

Publication

Artificial Neural Network Based Self-tuned PID Controller for Flight Control of Quadcopter, 2019-ICEET, Lahore. [Link](#)