Daksh Chhabra

Software Engineer
7daksh2003@gmail.com | +91 9643751462
@Daksh7112003 /daksh7112003

PROFESSIONAL SUMMARY

Software Engineer specializing in Ground Control Systems and autonomous drone software. Experienced in QGroundControl customization, MAVLink integration, and cross-platform development using C++, Qt, and QML. Strong background in real-time video systems, 3D mission planning, secure UAV communication, and AI-based object detection using YOLO and OpenCV. Proven ability to deliver reliable, production-grade UAV software for real-world operations.

SKILLS

Programming Languages: C++, Qt, QML, Python , PyQt, JavaScript, HTML , CSS, Tailwind CSS and React.js .
Tools & Technologies: QGroundControl , Qt Creator , GStreamer , Mission Planner , Mavlink , Ardupilot , PyMavlink , Inno-Setup, ArcGis , FireBase and SQL .
Libraries & API : OpenCV , YOLOv8(ONNX) , Weather API , Elevation API of the Google and ArcGIS .
Other Skills: Linux, AWS, Git, GitHub.

EXPERIENCE

Software Engineer | Optiemus Unmanned Systems **(Mar 2024 – Present)**

- Customized **QGroundControl (QGC)** frontend and backend using **C++, Qt, and QML** to support secure, scalable autonomous drone operations.
- Designed and enhanced core **GCS screens** including **Plan View, Fly View, Vehicle Setup, Login, and Landing**, improving operator workflow, safety, and usability.
- Implemented **3D autonomous navigation** using 2D flight planning with elevation data for accurate altitude control over varied terrain.
- Developed **Polyline-based 3D path following** for precise autonomous mission execution.
- Built a **dynamic Plan View panel** enabling real-time mission modification, waypoint adjustment, and flight parameter tuning.
- Enhanced the **Fly View screen** with intuitive controls for manual override, telemetry visualization, and autonomous state awareness.
- Developed a **Vehicle Setup module** for configuration, calibration, and system validation directly from the GCS.
- Implemented **servo control directly from the GCS**, enabling actuator operation without onboard manual intervention.
- Integrated **YOLOv8 (ONNX)** with the GCS for real-time object detection and tracking, enabling autonomous response to moving targets.
- Developed **custom joystick controls** similar to Mission Planner for real-time piloting, tuning, and fail-safe intervention.
- Implemented **secure Login and Authentication screens**, along with data and image logging for improved system security and traceability.
- Integrated a **Weather API** and built a **split-view monitoring system** for multi-perspective situational awareness.
- Implemented **MAVLink message signing** in QGroundControl to prevent spoofing, including customized CRC handling in message headers.
- Enabled **seamless video stream failover**, automatically switching from **Link 1 to Link 2** during communication loss without operator interruption.
- Delivered **cross-platform deployment** across **Windows, Linux, and Android**, ensuring consistent performance and reliability.

Software & AI Engineer Intern | Paudhify **(June 2023 – March 2024)**

- Developed company website as part of the product development team.
- Worked on an AI-based plant disease detection system using image analysis.

EDUCATION

- Computer Science Engineering (AIML) | Inderprastha Engineering College
- XII (CBSE) | GreenFields Pubic School Delhi

ACADEMIC PROJECTS

Tesla-Inspired Infotainment UI

- Developed a functional replica of Tesla's infotainment system using Qt and QML.
- Focused on fluid animations, responsive layout, and clean design to simulate real in-vehicle systems.

Technologies: Qt, QML, C++

Multi-Object Detection and Tracking (YOLO + SORT)
Developed a real-time multi-object detection and tracking system using YOLO and SORT to assign stable object IDs across video frames with Kalman filter–based motion prediction .
Technologies: C++, OpenCV, YOLO (pretrained), SORT, Kalman Filter, IoU Matching, GStreamer, CMake, Git .