SIT725 Task 1.3P: Design Your Service

UAV Performance Analysis & Visualization Platform

Who am I? As an Honours Student specializing in MEC-enabled autonomous UAV delivery systems, I want to be known for creating research tools that bridge theoretical network analysis with practical UAV performance evaluation.

My Vision: I will create a MEC-UAV Performance Analysis Platform that transforms real-world experimental data from my Honours research into interactive 3D visualizations, enabling analysis of network degradation impact on UAV flight performance.

Research Context: Currently conducting Honours research on "A real-world experimental testbed for MEC-enabled autonomous UAV delivery system" where I performed T1 experiments investigating how network degradation affects UAV flight performance using Crazyflie drones.

Service Description: My platform serves the UAV research community with comprehensive analysis tools for network-aware flight experiments.

Researchers can: • Upload experimental flight data from network degradation studies • Visualize 3D flight trajectories with network condition overlays • Analyse flight accuracy vs network performance through interactive dashboards • Compare baseline vs degraded network scenarios side-by-side • Generate research-quality reports with statistical analysis and visualizations

Key Features: • Network-aware flight analysis showing correlation between connectivity and accuracy • Statistical visualization of position errors during network degradation • Phase-based analysis (transit vs waypoint) under different network conditions • Real-time 3D trajectory reconstruction with network quality indicators • Academic-grade error analysis with confidence intervals

Academic Impact: This platform demonstrates practical applications of my Honours research, showcasing how network conditions affect autonomous UAV delivery systems and providing tools to validate MEC architectures and optimize UAV performance.

Target Audience: UAV researchers, MEC system developers, and academic institutions studying autonomous delivery systems.

This semester, I want to first create the prototype of the basic functions. Later, I also want to add the function of users personalizing the addition of obstacles to simulate the flight environment.