Realtime situational awareness in remote areas using AI for different use cases

Introduction

UAV-based situational awareness relies on large volumes of sensor data that are usually processed only after the mission due to limited or unstable connectivity in remote regions. This delay reduces the effectiveness of decision-making, especially in time-critical scenarios such as disaster response.

Project Idea

The project idea explores adaptive communication concepts combined with AI-supported data prioritisation and processing to enable near real-time situational awareness during UAV missions, even under constrained and heterogeneous connectivity conditions.

AI-Enabled UAV Situational Awareness in Remote Areas

Adaptive Connectivity — AI & Data Processing — AI & Data Processing — Situational Awareness — MISSING?
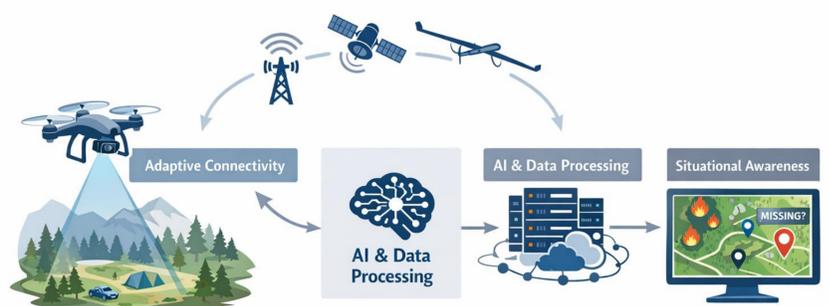
Source: own illustration (AI-generated)

Expected Outcome

❑ *Faster and better-informed decision-making in time-critical situations*

❑ *Increased operational safety and efficiency for responders and operators*

❑ *Scalable and transferable solutions across sectors such as disaster response, forestry, agriculture and environmental monitoring*

❑ *New insights for future communication and AI-supported UAV services*

Use Cases

Forestry & Agriculture

Disaster Response

Cartography

?

Your Use Case

We are looking for…

❑ *Mobile network operators / connectivity providers*
❑ *Real-time data storage and processing providers*
❑ *Environmental and weather monitoring experts*
❑ *UAV operators*
❑ *Emergency services / first responder organisations*
❑ *Risk management and safety experts*
❑ *AI experts (model developer)*
❑ *Sensor manufacturers (optical, thermal, LiDAR,etc.)*

Contact

Robin Niederl, MSc.
robin.niederl@fh-joanneum.at
+43 (0) 316 5453 6446
8020 Graz, Alte Poststraße 149
www.fh-joanneum.at