



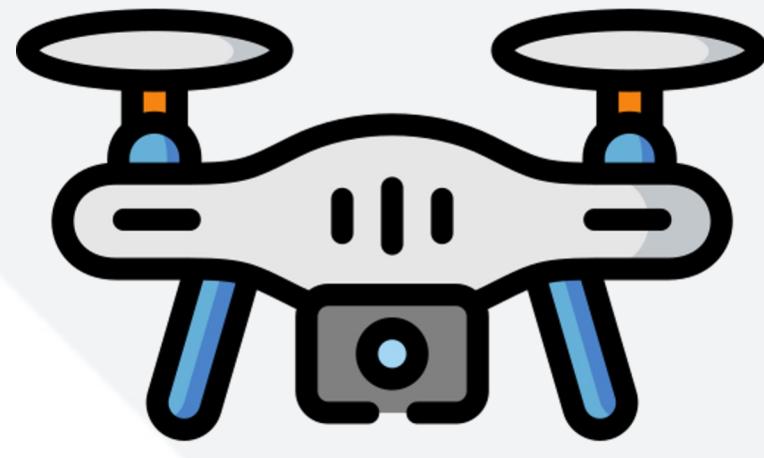
# Ege CargoWings



## **Machine Learning-Enhanced Swarm Drone System for Indoor Cargo Task Allocation Considering Non-Ideal Communication Factors**

### **Disclaimer**

This project is still in progress and certain parts of it may undergo changes during the development process.



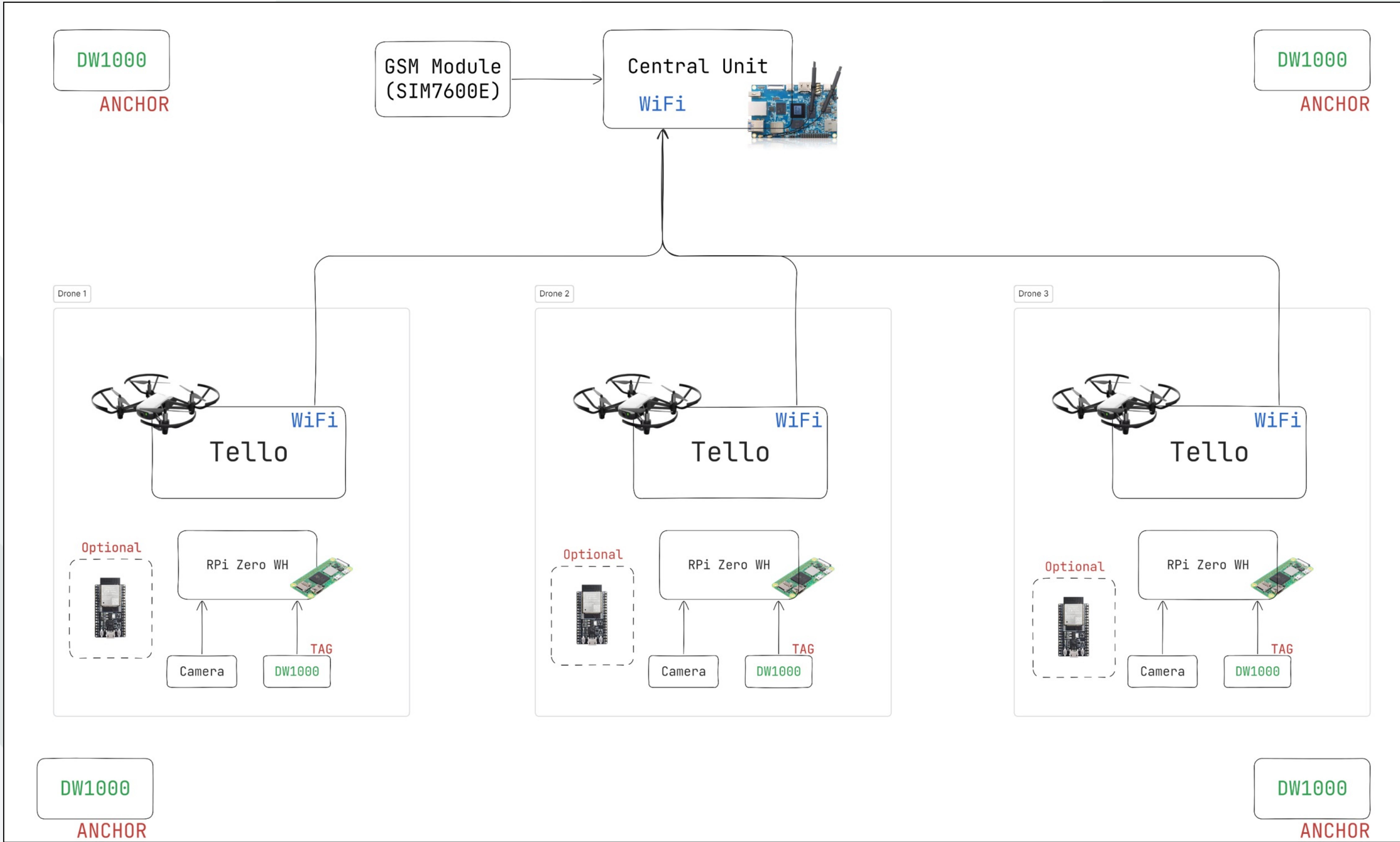
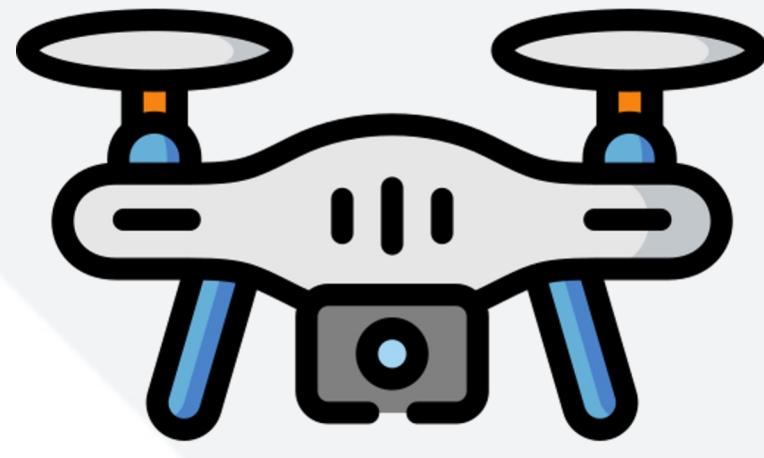
## Objective

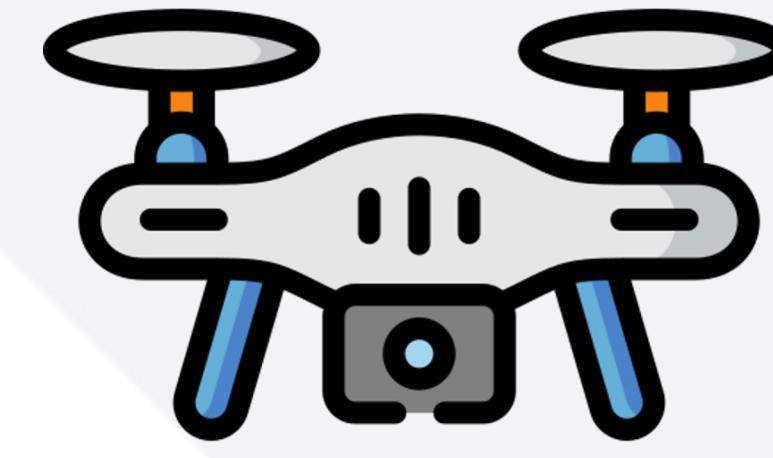
The objective of this graduation project is to design and implement an **indoor** cargo delivery system using a **swarm** of **drones**.

This system will leverage **machine learning** algorithms to optimize task allocation among the drones while taking into account non-ideal communication factors that are commonly encountered in indoor environments.

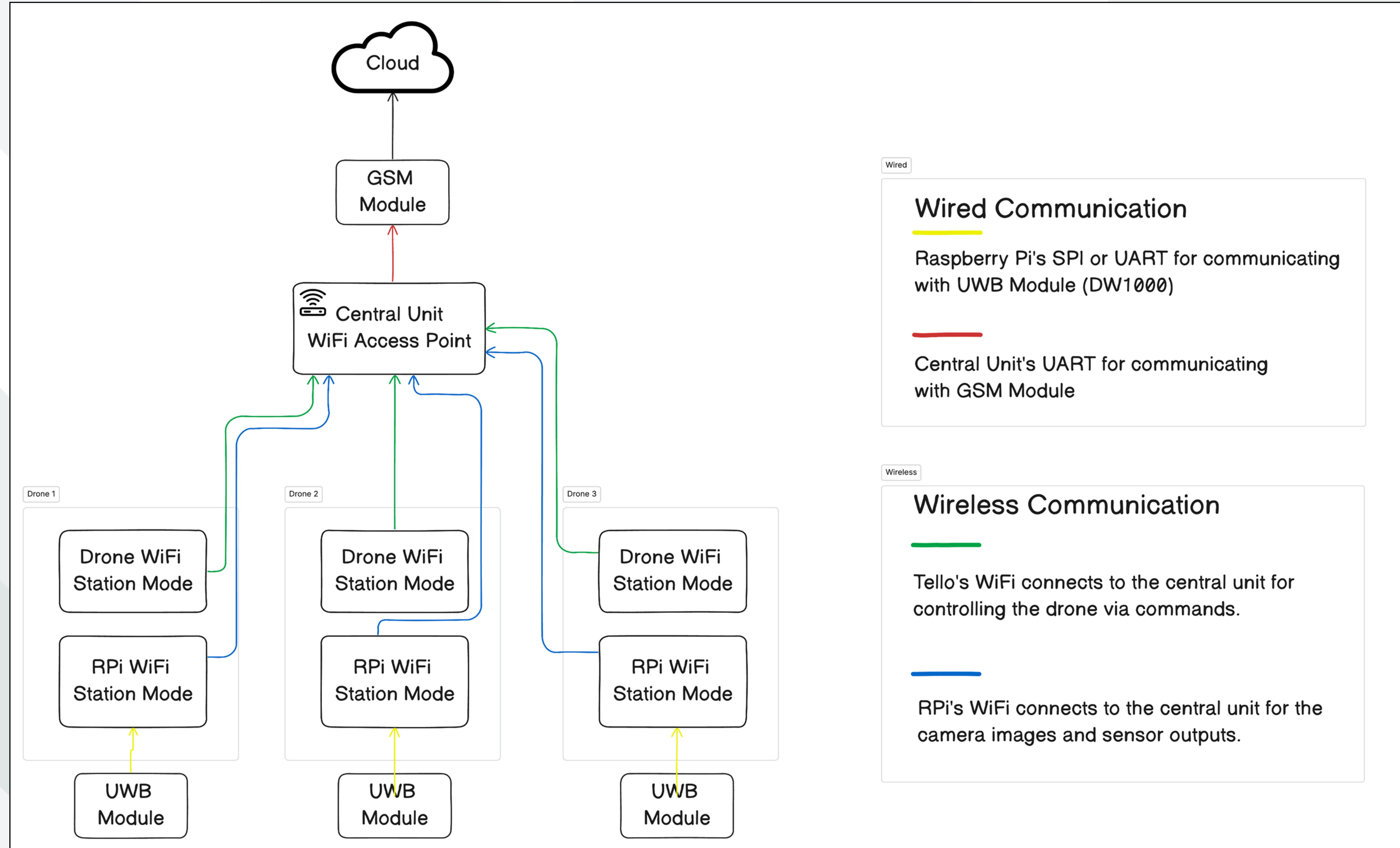
Moreover, we will incorporate **computer vision** capabilities to handle critical tasks such as obstacle avoidance and emergency situation detection.

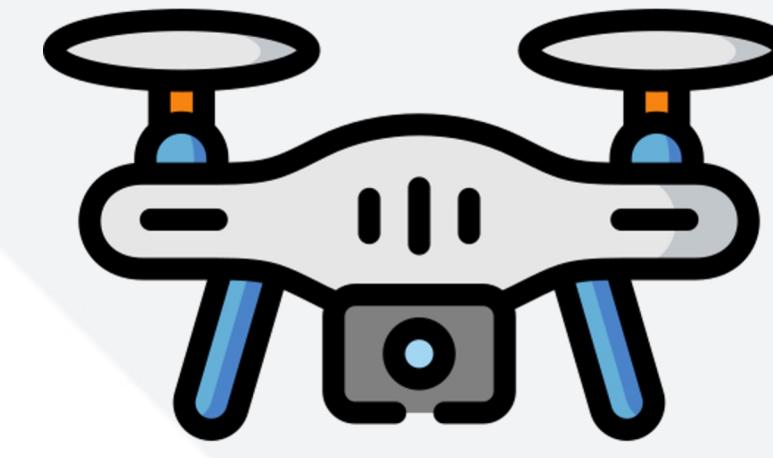
# System Architecture (Hardware)





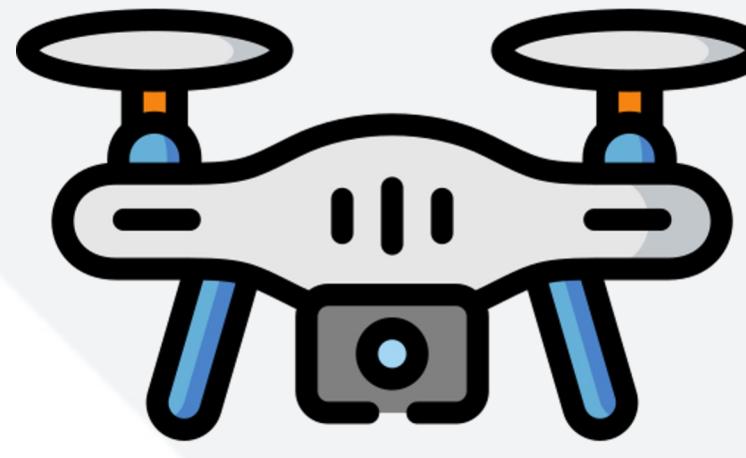
# Network Architecture (Wired & Wireless)





# Required Components

Components	Quantity	Price(peace)	Sum (\$)
DJI Tello	5	130	650
Raspberry Pi Zero W2	5	15	75
Orange Pi 5B	2	150	300
GSM Module SIM7600E	2	75	150
DW1000-DEV Module	10	35	350
Camera Module	5	40	200
Orange Pi compatible touch display	2	30	60
			1785



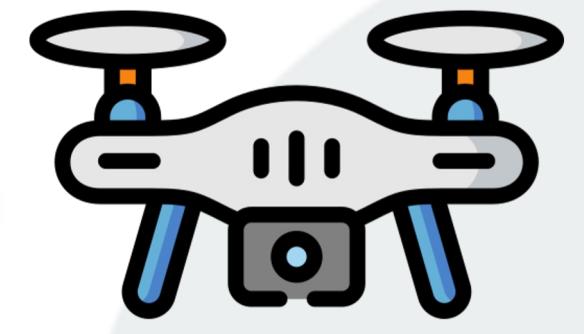
## Questions

---

- Why did you choose DJI Tello ?
- Why did you put the Raspberry Pi Zero on top of that drone? and why did you choose the Orange Pi5 B for the central unit?
- Why not use GPS for position information?
- How do you plan to integrate machine learning algorithms into the system?
- Why do you have ESP32 optionally in the system design part?



Ege CargoWings



Thank You