# Aerial Assistance for Search and Rescue

## Team F

# Meet the team

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Sponsor:
Near Earth Autonomy

# Meet the team

# Project Description

**Motivation**

Most of the existing approaches to SAR(Search and Rescue) using aerial vehicles currently rely heavily on teleoperated drones with minimal autonomy, which increases the risk for the rescue team and the cost of SAR operations.

**Solution**

Our project uses a hexrotor for search and rescue, which only requires a first-responder with modest training, and is as autonomous as possible. With data collected by RGB camera、thermal , our system can analyze most likely location of the object, and conduct rescue operation efficiently and reliably.



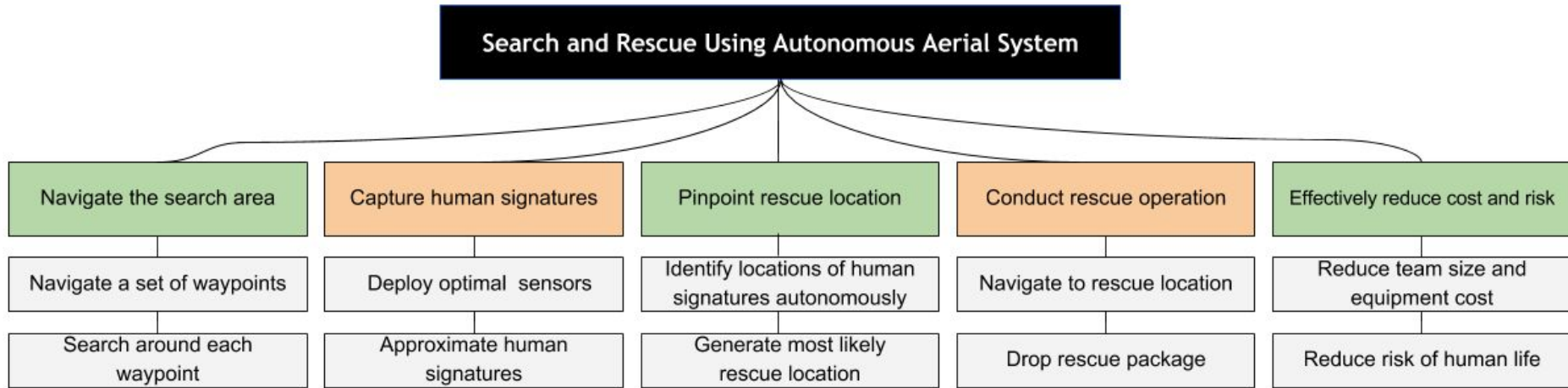http://www.carson.org/government/



http://store.dji.com/product/

# Objective Tree

# Draft Functional Requirements

The system shall

1. Autonomously navigate through a set of provided waypoints
2. Explore the surroundings around each waypoint
3. Collect perceptual data while navigating
4. Process the data to identify human signatures
5. Analyze the identified signatures to accurately estimate human location
6. Navigate to the rescue location
7. Drop the "rescue" package

# Draft Performance Requirements

The system will

1. Operate in a search area with dimensions 200m x 200m and no occlusion
2. Complete one iteration of search in less than 25 minutes
3. Cover areas around the waypoints with 20% tolerance
4. Collect perceptual data limited to 3-4 (?) types
5. Identify 3-4 (?) human signatures
6. Estimate human location with 80% confidence and +-10m tolerance
7. Carry a "rescue" package weighing ~100g
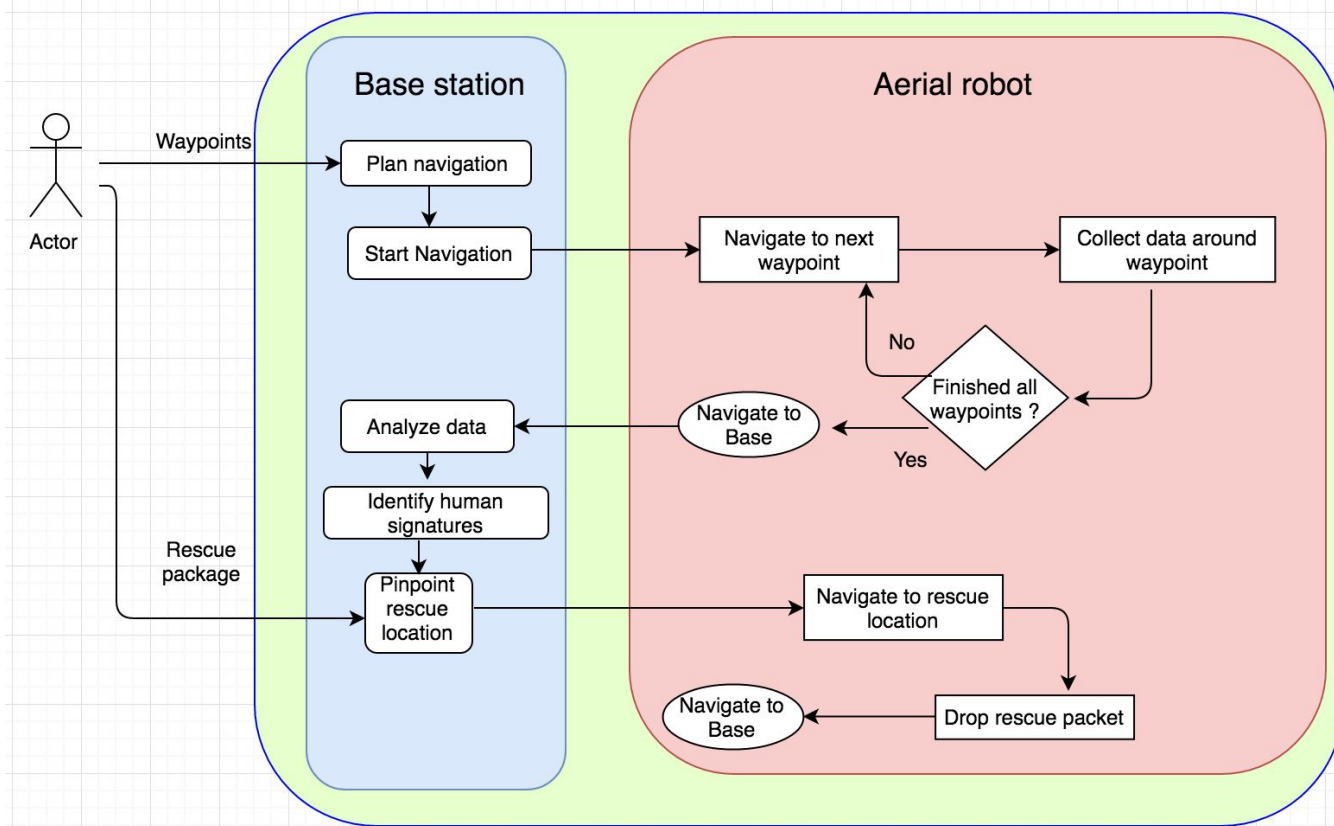8. Drop the package at the rescue location with a tolerance of +-5m
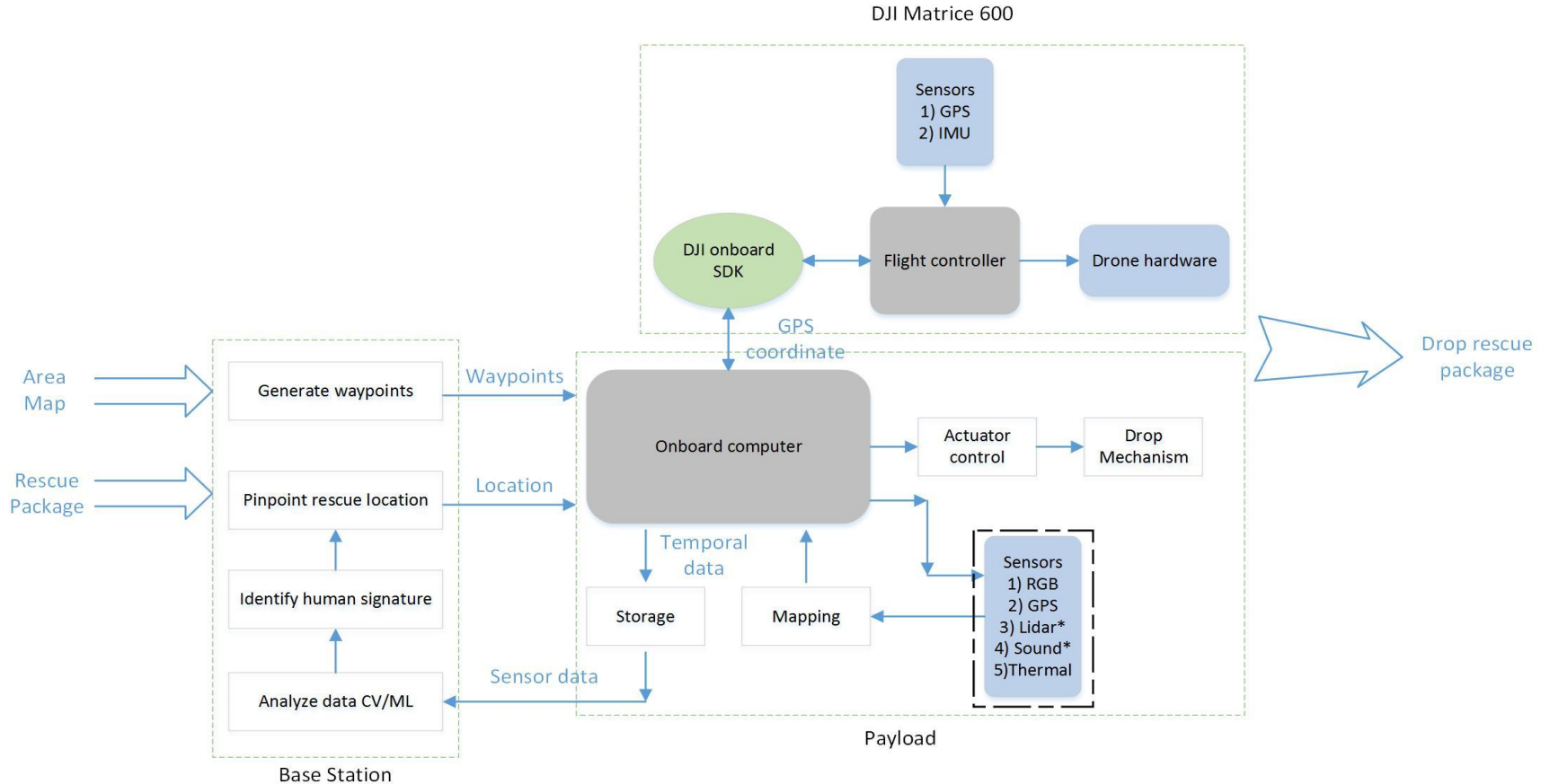
# Draft Non-functional Requirements

The system will

1. Reduce the team size required to <=2
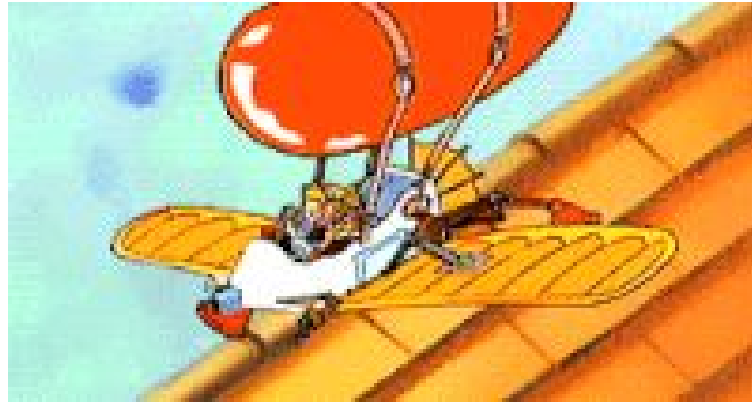2. Reduce risk to human lives
3. Reduce equipment cost required

# Draft Functional Architecture

# Draft Cyberphysical Architecture

# Sadly, we won't be able to do this..



# Thank you!