

Search & Rescue Coordinated Intelligence Systems

*The autonomous teamwork of ground and air assets
in a mission-oriented environment*



SRCIS

"Perfectly balanced... As all things should be."

Yavanni
Ensley

Younghoon
Cho

Jaylin "Pop"
Ollivierre

OVERVIEW



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Ensley

Younghoon
Cho

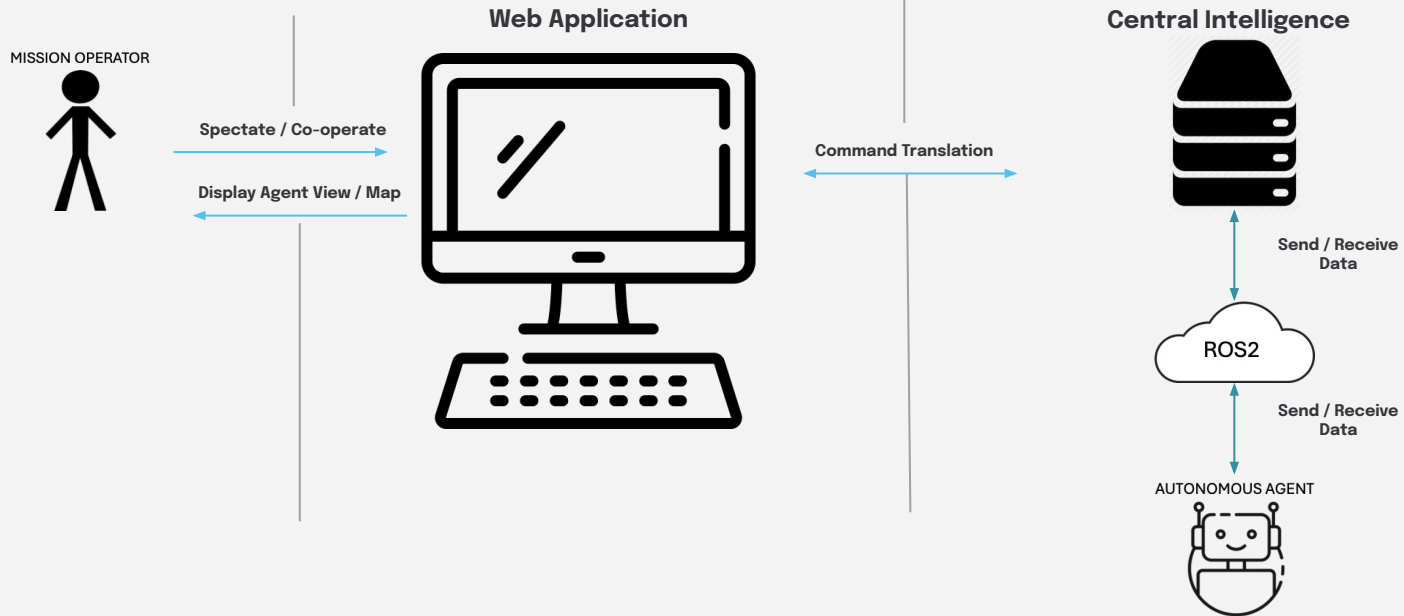
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Ollivierre

DIAGRAM

Users

User-Facing Machine

Non-User-Facing Machine

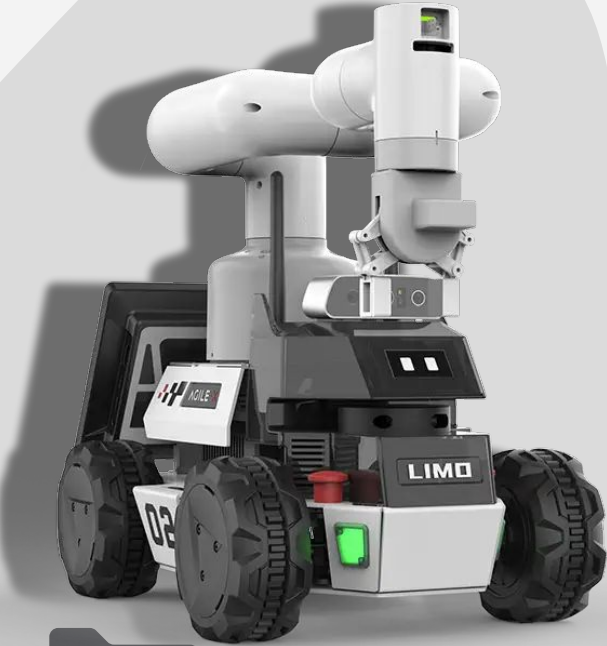


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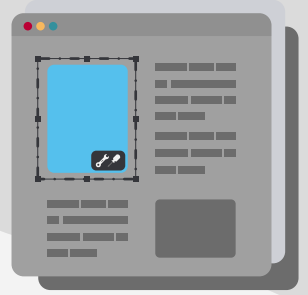
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M5

Progress Matrix



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M5 Progress Matrix

Completed Tasks



Task	Completion	Yav	Young	Pop	To-Do
Target Sharing	100%	50%	25%	25%	N/A
Multi-agent Coordination	75%	60%	25%	15%	Setup Unitree G02 + operation
Integrating custom ROS Driver w/ Drone (Parrot)	75%	40%	60%	0%	The drone is fully controllable through ROS, need to finalize the SLAM algorithm.
Integrating custom ROS Driver w/Unitree Go2	80%	40%	0%	60%	Errors with the Navigation2 driver prevent us from marking it as complete.
Concurrent Map Sharing	50%	60%	20%	20%	Test map merging in active demo, code has been tested to compile on the hardware.
Mission Command Structure	10%	33%	33%	33%	Draft a scheme of maneuver to explain the priorities pre-, during, and post-execution
Target engagement algorithm	50%	33%	33%	33%	Refine the engagement algorithm; the robot can follow a moving target relatively well and has basic logic for reacquiring a lost target.
Showcase Poster Drafted	10%	33%	33%	33%	Work on revisions given by advisor
Full-dress Demo	0%	33%	33%	33%	Work out remaining blockers with the drones and unitrees

Yavanni
Enslley

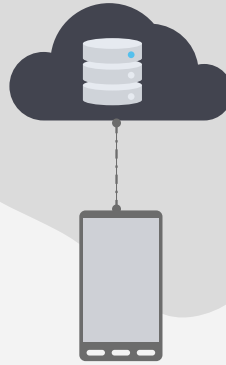
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Target sharing

- When target is recognized, other robots who don't have the target in sight is able to calculate the fastest route considering obstacles.

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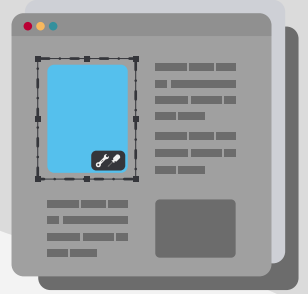
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M6

Task Matrix



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M6 Task Matrix

M6 Tasks



Task	Yav	Young	Pop	To-Do
<i>Target Sharing</i>	50%	25%	25%	N/A
<i>Multi-agent Coordination</i>	60%	25%	15%	Setup Unitree GO2 + operation
<i>Integrating custom ROS Driver w/ Drone (Parrot)</i>	40%	60%	0%	The drone is fully controllable through ROS, need to finalize the SLAM algorithm.
<i>Integrating custom ROS Driver w/Unitree Go2</i>	40%	0%	60%	Errors with the Navigation2 driver prevent us from marking it as complete.
<i>Concurrent Map Sharing</i>	60%	20%	20%	Test map merging in active demo, code has been tested to compile on the hardware.
<i>Mission Command Structure</i>	33%	33%	33%	Finalize a scheme of maneuver to explain the priorities pre-, during, and post-execution
<i>Target engagement algorithm</i>	33%	33%	33%	Refine the engagement algorithm; the robot can follow a moving target relatively well and has basic logic for reacquiring a lost target.
<i>Showcase Setup</i>	33%	33%	33%	Poster and Booth Plan
<i>Full-dress Demo</i>	33%	33%	33%	Work out remaining blockers with the drones and unitrees

Yavanni
Enslley

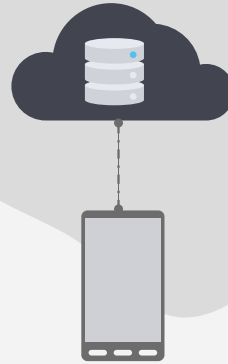
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Target sharing

- takes long time for robot to calculate route
- Robots gather map info when no target is present

Multi-agent coordination

- **Drone(parrot)**
- **Unitree Go2**
 - make code for Limos work for Unitree
 - add skyview of drone for mapping

Integrating custom ROS Driver w/ Drone and GO2

- updating code to send the target location to other agents.
- fix errors with costmap on unitree
- add publishers for base driver

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M6 Task Matrix

M6 Tasks



Concurrent Map Sharing

- share map to Unitree & Drone

Mission Command Structure

- Implementation; prompting the agents

Full-dress Demo + Poster

- make demo and get feedback from customer(Professor)
- Figure out if we can bring robots or will need a video demonstration in the lab

Showcase Setup

- Demo environment
- Table items
- Visual aids for the judges

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QUESTIONS?



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