

Search & Rescue Coordinated Intelligence Systems

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

Yavanni
Ensley

Younghoon
Cho

Jaylin "Pop"
Ollivierre



SRCIS

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

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

OVERVIEW

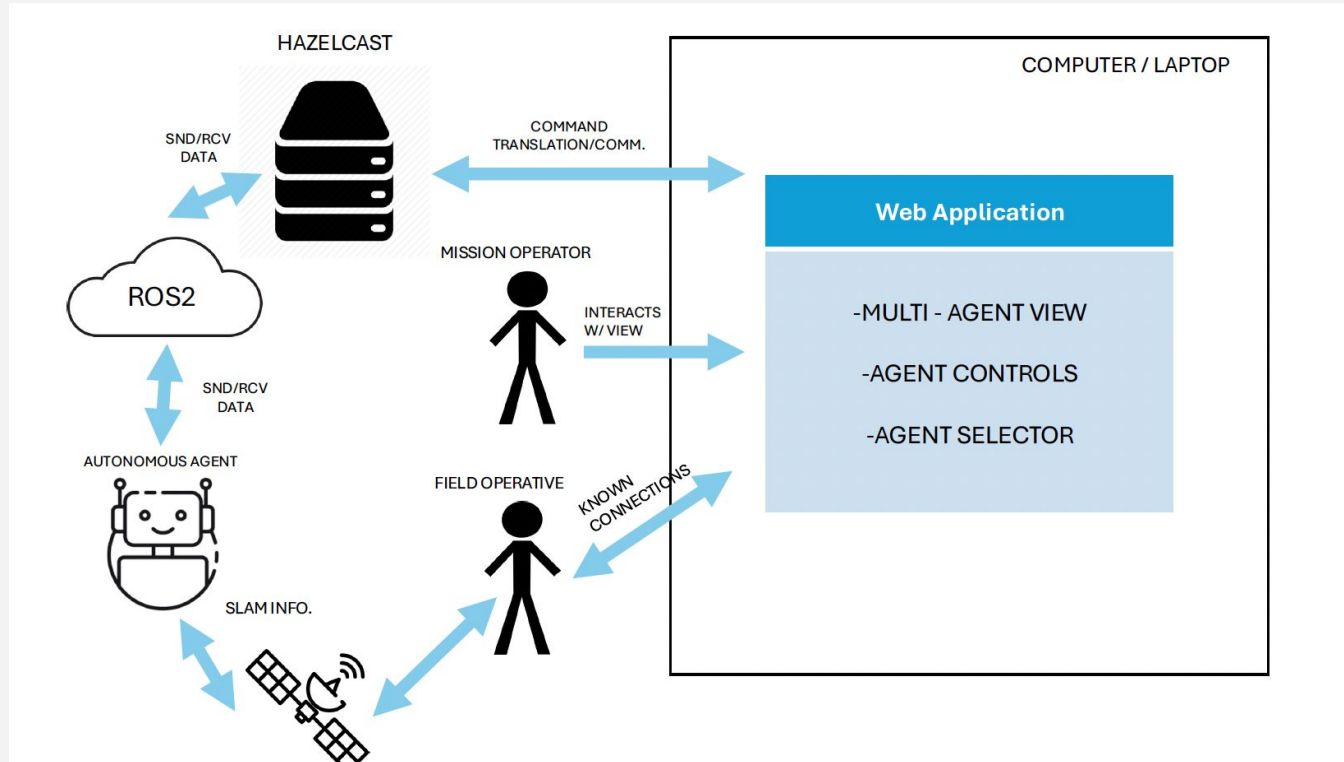


Yavanni
Ensley

Younghoon
Cho

Jaylin "Pop"
Ollivierre

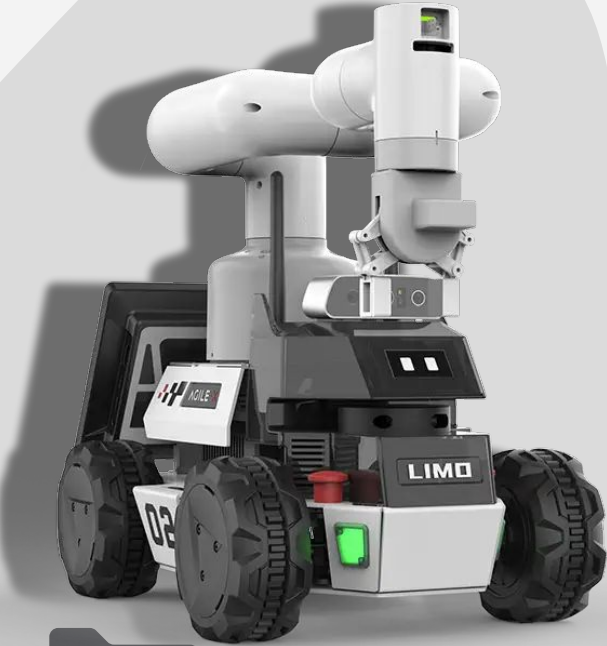
DIAGRAM



Yavanni
Ensley

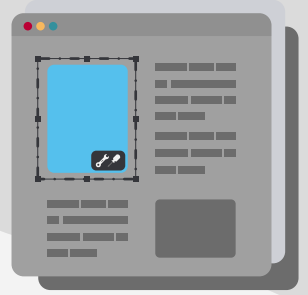
Younghoon
Cho

Jaylin "Pop"
Ollivierre



M4

Progress Matrix



SRCIS

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

M4 Progress Matrix

Completed Tasks



Task	Completion	Yav	Young	Pop	To Do
<i>Drone Setup (Parrot)</i>	100%	40%	60%	0%	
<i>Unitree Go2 Setup</i>	100%	40%	0%	60%	
<i>Target Sharing</i>	80%	40%	20%	20%	Clean up bugs
<i>Multi-agent Coordination</i>	75%	50%	15%	10%	Unitree G02 / Parrot integration
<i>Concurrent Map Sharing</i>	10%	10%	0%	0%	Implement an algorithm we researched to fit the needs of what we want; Merge the maps
<i>Target engagement algorithm</i>	0%	0%	0%	0%	Dependent on other tasks. Make an efficient algorithm for multiple robots to surround the target.
<i>Robot Operator</i>	0%	0%	0%	0%	Dependent on other tasks; need to finish the target engagement algorithm

Yavanni
Ensley

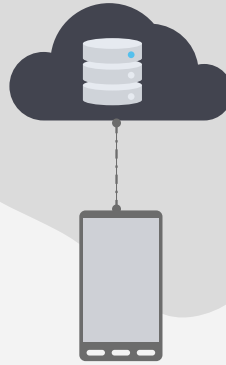
Younghoon
Cho

Jaylin "Pop"
Ollivierre



SRCIS

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



Parrot drone setup

- drone is able to
 - land/takeoff
 - operate
 - live stream
- With safety code

Unitree G02 setup

- Fully remote operable
- Limo code reusable

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.

Yavanni
Ensley

Younghoon
Cho

Jaylin "Pop"
Ollivierre



SRCIS

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

Multi-agent Coordination

- Unitree
 - Parrot
- Needs to be added

Concurrent Map Sharing

- working on different robots to be on same origin map

Yavanni
Ensley

Younghoon
Cho

Jaylin "Pop"
Ollivierre



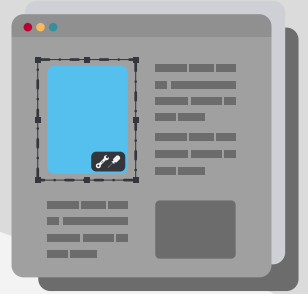
SRCIS

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



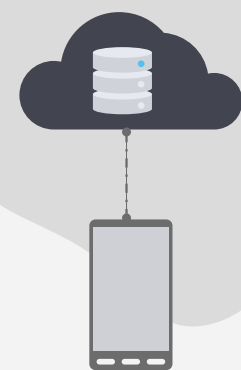
M5

Task Matrix and Rollovers



SRCIS

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



Target engagement algorithm

- Unitree
 - Parrot
- Needs to be added to the current mapsharing

Robot Operator

- Deciding the confidence level of the target
- continuously track the target when target is unfound

Yavanni
Ensley

Younghoon
Cho

Jaylin "Pop"
Ollivierre



SRCIS

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

M4 Task Rollover

M5 Task Matrix

M5 Tasks



Task	Yav	Young	Pop	To-Do
<i>Target Sharing</i>	50%	25%	25%	Clean up bugs
<i>Multi-agent Coordination</i>	60%	25%	15%	Setup Unitree G02 + operation
<i>Drone integration (Parrot)</i>	40%	60%	0%	Integrate w/ Base Driver
<i>Unitree Go2 Integration</i>	40%	0%	60%	Integrate w/ Base Driver
<i>Concurrent Map Sharing</i>	60%	20%	20%	Implement an algorithm we researched to fit the needs of what we want; Merge the maps
<i>Target engagement algorithm</i>	33%	33%	33%	Dependent on other tasks. Make an efficient algorithm for multiple robots to surround the target.
<i>Robot Operator</i>	33%	33%	33%	Dependent on other tasks; need to finish the target engagement algorithm
<i>Mission Command Structure</i>	33%	33%	33%	Draft a scheme of maneuver to explain the priorities pre-, during, and post-execution
<i>Full-dress Demo + Poster</i>	33%	33%	33%	Dependent on other tasks; Mock demo



Yavanni
Enslay

Younghoon
Cho

Jaylin "Pop"
Ollivierre



SRCIS

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



Target sharing Multi-agent coordination

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

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

Yavanni
Ensley

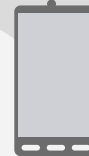
Younghoon
Cho

Jaylin "Pop"
Ollivierre



SRCIS

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



Concurrent Map Sharing

- share map to
Unitree & Drone

Mission Command Structure

- Plan for execution
and coordination

Full-dress Demo + Poster

- make demo and get
feedback from
customer(Professor)

Yavanni
Ensley

Younghoon
Cho

Jaylin "Pop"
Ollivierre



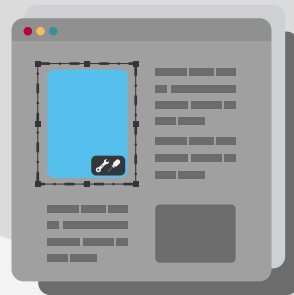
SRCIS

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



Demos

- Target Sharing
- Go2 Remote Operation



SRCIS

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

LIMO - Target Sharing

Unitree Go2 Remote Operation



SRCIS

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

QUESTIONS?



SRCIS

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