Human-autonomous teamwork of ground and air vehicles Milestone 1

Yavanni Ensley, yensley2022@my.fit.edu
Younghoon Cho, ycho2021@my.fit.edu
Jaylin Ollivierre, jollivierre2022@my.fit.edu

Overview

1. Milestone 1 Progress
2. LIMO PRO Image
3. Prebuilt Blocks / Programs
4. Milestone 2 Plan

Milestone 1 Progress Matrix

Task	Completion %	**Yav**	**Young**	**Pop**	To do
Direct control of robots	100%	33%	33%	33%	N/A
Isolate factors that are relevant to our final demonstration and find methods to implement them with the minimal work.	100%	33%	33%	33%	N/A
Using prebuilt blocks, implement a basic search algorithm for the robot to find a stationary target	100%	33%	33%	33%	N/A
Enabled human-robot cooperation to locate the stationary target	0%	50%	25%	25%	Needs proper interface integration.

Milestone 1 Progress Matrix

Task	Completion %	**Yav**	**Young**	**Pop**	To do
Abstract Wrapper Layer	65%	33%	33%	33%	Needs robot discovery
Compare and select Collaboration Tools	100%	33%	33%	33%	N/A
Requirement Document	100%	25%	25%	50%	N/A
Design Document	100%	50%	25%	25%	N/A
Test Plan	100%	25%	50%	25%	N/A

Accomplished tasks

1

Direct control of robots

Setted up the LIMO robots with ROS1 demos, but since the firmware didn't natively support ROS2, we built the ROS2 drivers and ROS1 bridge to gain direct control.

2

Isolation of factors

LIMO has SLAM and Cartographer

RViz for controls & navigation

3

Prebuilt blocks

Prebuilt blocks such as mapping, control interface etc.
Initially we focus more on running the demo.

4

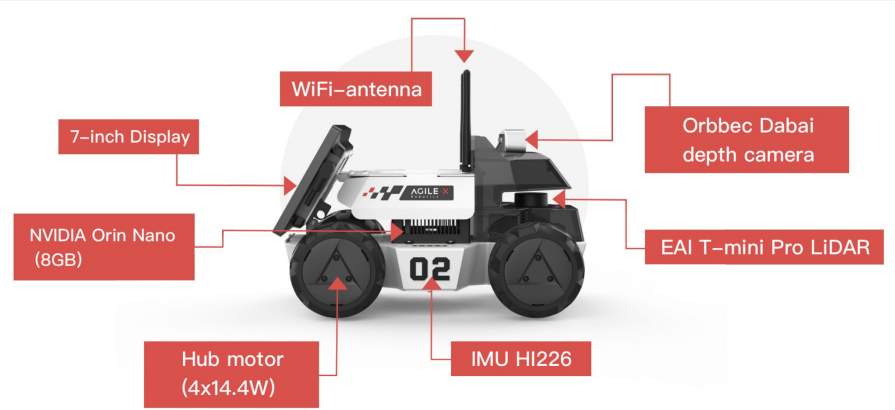
Compare select collab. tools

Github
Timeful
G Suite

5

Requirement, Design, Test

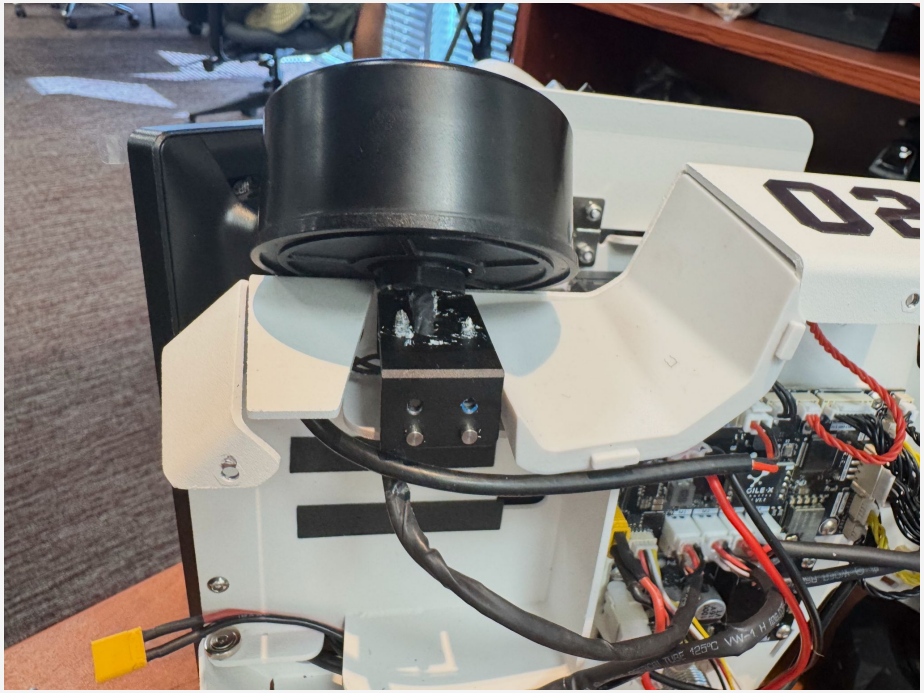
All 3 documents completed

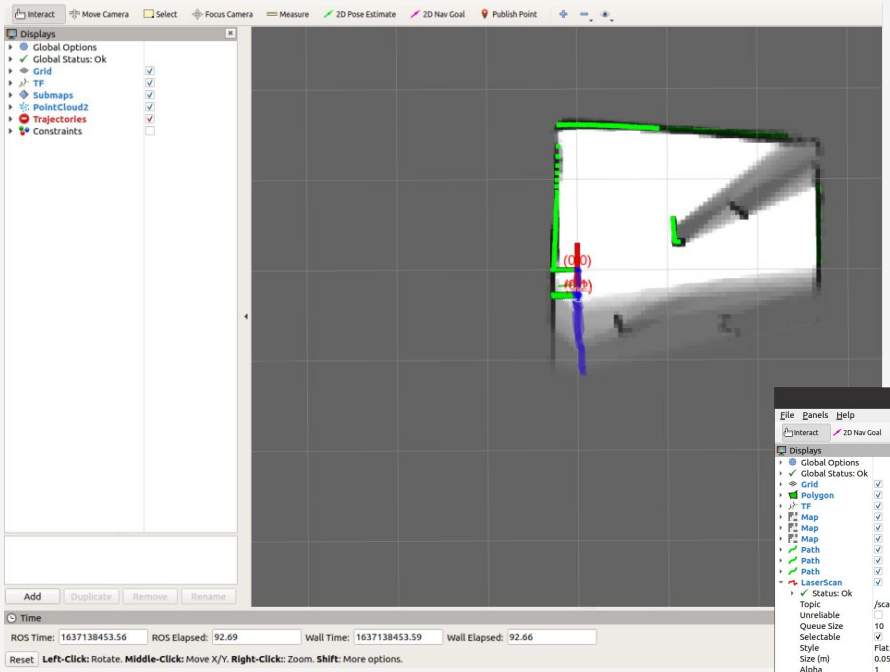


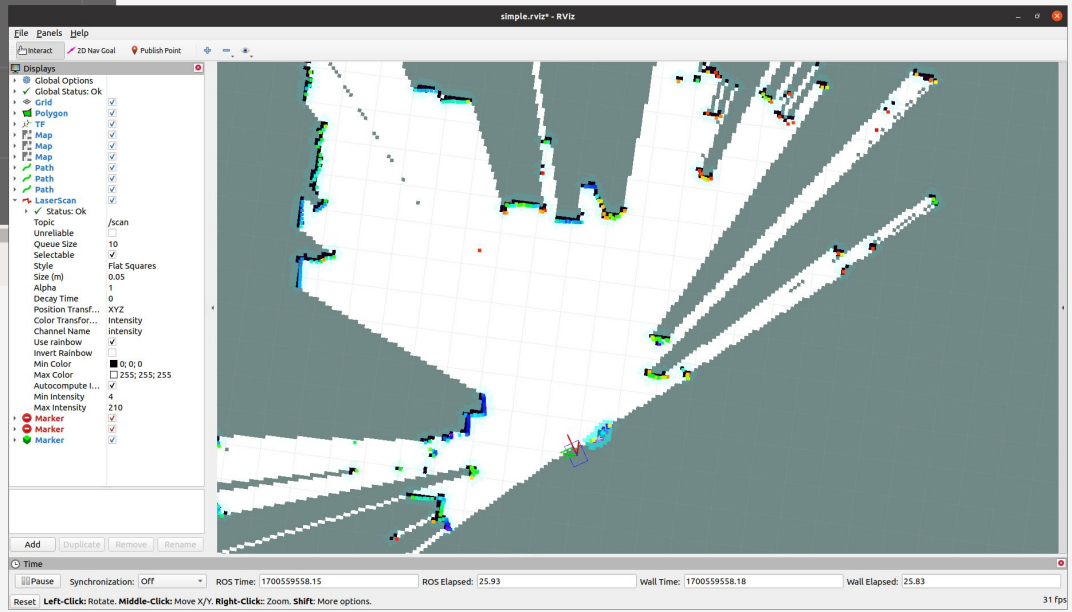
Device Name	agilex-desktop 〉

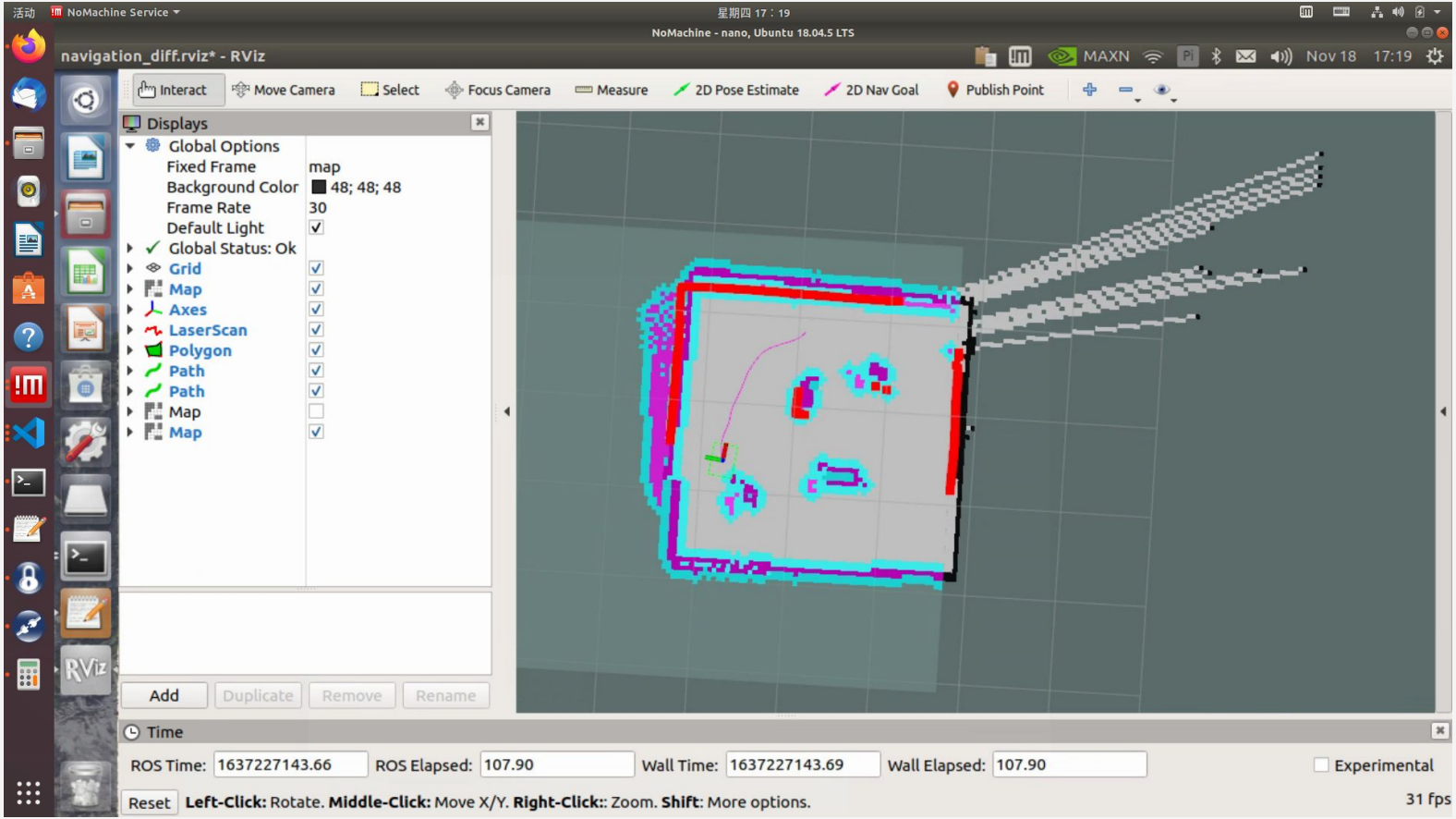
Memory	6.3 GiB
Processor	ARMv8 Processor rev 1 (v8l) × 6
Graphics	NVIDIA Tegra Orin (nvgpu)/integrated
Disk Capacity	Unknown

OS Name	Ubuntu 20.04.6 LTS
OS Type	64-bit
GNOME Version	3.36.8
Windowing System	X11




Interact
Move Camera
Select
Focus Camera
Measure
2D Pose Estimate
2D Nav Goal
Publish Point
Displays
Global Options
Global Status: Ok
Grid
TF
Submaps
PointCloud2
Trajectories
Constraints
Add
Duplicate
Remove
Rename
Time
ROS Time: 1637138453.56
ROS Elapsed: 92.69
Wall Time: 1637138453.59
Wall Elapsed: 92.66
Reset
Left-Click: Rotate. Middle-Click: Move X/Y. Right-Click:: Zoom. Shift: More options.


simple.rviz* - RViz
File
Panels
Help
Interact
2D Nav Goal
Publish Point
Displays
Global Options
Global Status: Ok
Grid
Polygon
TF
Map
Map
Map
Path
Path
Path
LaserScan
Status: Ok
Topic /scan
Unreliable
Queue Size 10
Selectable
Style Flat Squares
Size (m) 0.05
Alpha 1
Decay Time 0
Position Transf... XYZ
Color Transfor... Intensity
Channel Name intensity
Use rainbow
Invert Rainbow
Min Color 0; 0; 0
Max Color 255; 255; 255
Autocompute I...
Min Intensity 4
Max Intensity 210
Marker
Marker
Marker
Add
Duplicate
Remove
Rename
Time
Pause
Synchronization: Off
ROS Time: 1700559558.15
ROS Elapsed: 25.93
Wall Time: 1700559558.18
Wall Elapsed: 25.83
Reset
Left-Click: Rotate. Middle-Click: Move X/Y. Right-Click:: Zoom. Shift: More options.
31 fps


活动
NoMachine Service
星期四 17：19
NoMachine - nano, Ubuntu 18.04.5 LTS
navigation_diff.rviz* - RViz
MAXN
Nov 18
17:19
Interact
Move Camera
Select
Focus Camera
Measure
2D Pose Estimate
2D Nav Goal
Publish Point
Displays
Global Options
Fixed Frame
map
Background Color
48; 48; 48
Frame Rate
30
Default Light
Global Status: Ok
Grid
Map
Axes
LaserScan
Polygon
Path
Path
Map
Map
Add
Duplicate
Remove
Rename
Time
ROS Time:
1637227143.66
ROS Elapsed:
107.90
Wall Time:
1637227143.69
Wall Elapsed:
107.90
Experimental
Reset
Left-Click: Rotate. Middle-Click: Move X/Y. Right-Click:: Zoom. Shift: More options.
31 fps

Milestone 2 Plan Matrix

Task	**Yav**	**Young**	**Pop**
Enabled human-robot cooperation to locate the stationary target	33%	33%	33%
Abstract Wrapper Layer	33%	33%	33%
Complete repair of LIMO robots	33%	33%	33%
Interface prototype from design document	50%	25%	25%
Defining robot capabilities	25%	25%	50%
Experimentation with aerial drones	25%	50%	25%
Complete Control of Ground Vehicles	33%	34%	33%

Questions?