Voyager Mobile Robot Hardware Specifications

The Voyager robot is a mobile platform intended to support research into robotics and closely related fields. The Voyager robot is outfitted with significant processing power to run computationally expensive tasks such as mapping, path planning, localisation, and filtering. It is also equipped with a 3D LiDAR scanner which the on-board software can take advantage of to perform obstacle avoidance. The platform is ideally built for indoor applications but can also function in selected outdoor locations such as paved roads, footpaths, and lawns.

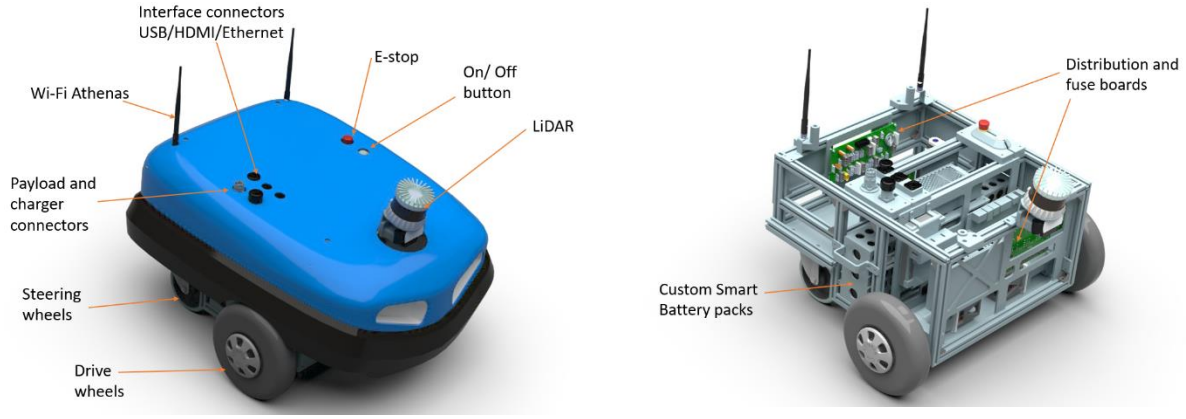

Figure 1: CAD rendering of Voyager robot with and without the shell

Hardware Specifications

Drive Mechanism	Differential drive with castors
Payload Connectors	RJ45 Port for Ethernet Connectivity USB3.0 Port On-board Wi-Fi access point HDMI Port
Payload Power	5V (5A max), 12V (2A max) and Battery Voltage (2A max)
Battery	24V 24Ah Lithium Phosphate (Li-FePO4) Battery Pack with RS485 communication.
LiDAR Sensor	Ouster OS0-32 with a maximum measurement range of 100m, accuracy range of ±0.1cm, vertical field of view of 90°, and a horizontal field of view of 360°.
IMU Sensor	Xsens MTi-630 AHRS
Other Sensors	Wheel encoder
Camera	Logitech C920 HD Pro Webcam
Manual Controller	Wireless X-box remote

Software Specifications

Operating System	Ubuntu 22.04 LTS
Robot Operating System Version	ROS2 Humble
Software speed	Limit of 1.2 m/s implemented for safety. Theoretical maximum speed of 2.7 m/s.
CPU	Intel Core i9 Processor