Amphibious Autonomous Surveillance UGV

Team ID : 1349

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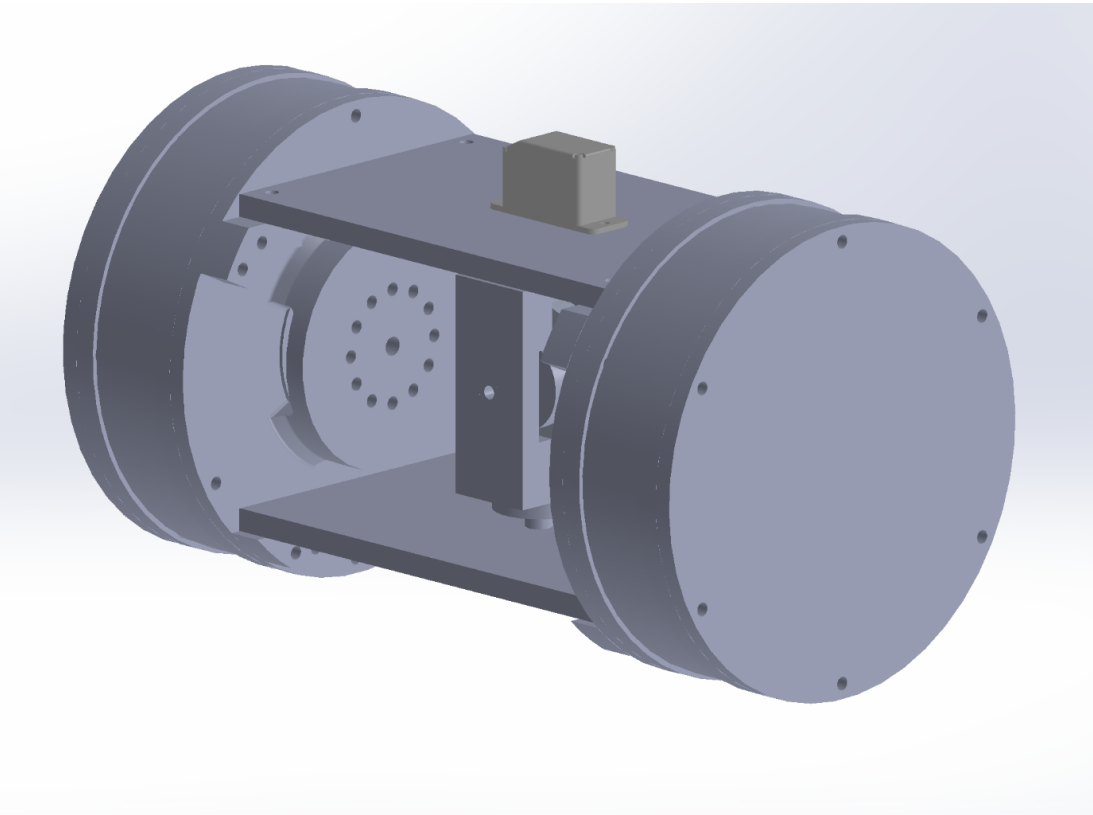
Overview

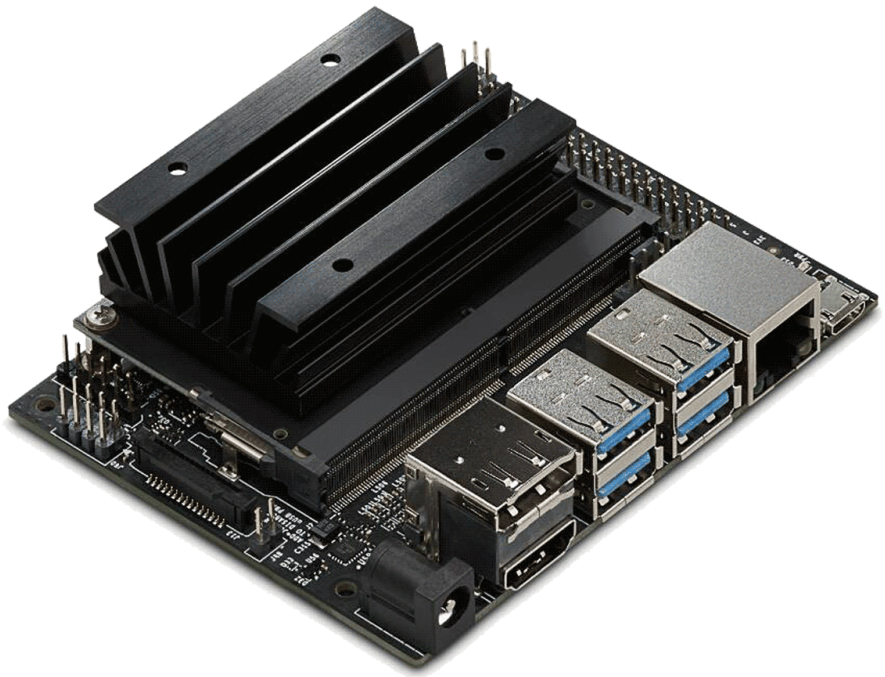
PHASE 1 : Robot Overview

- Space on the side for Cameras;
- Phase 1 includes proper traversal and balancing of the robot using gyro and Encoders;
- Also includes selection of structure of the wheel and for step climbing;
- Also we have theoretically solved for the kinematics and dynamics of the bot.



Jetson Nano

- GPIO interfacing on Jetson Nano;
- Also implemented communication protocol i.e. USART with Jetson Nano.



Software Implementation

- Implemented YOLO algorithm for object detection such as people,knife,etc and also implemented person tracking;
- Implemented video and audio processing and then transferring it over internet through TCP protocol using Socket libraries in python.
- Also used fast2sms services to send urgent alerts to the user through SMS.

Current ongoing Implementation

- Implementing SLAM algorithm using 2d Lidar.
- Implementing Intel real-sense firmware for depth 3D mapping and also for localization.
- Interfacing sensors with Jetson Nano.
- Also Interfacing Intel real-sense with Jetson Nano for on board object detection.

Future Implementation

- Natural Language Processing for interacting with the bot through voice commands.
- Foot steps using deep learning.
- Determining the air quality during a fire breakout.

The End