

List of Materials:

Note: This project is part of the SocRob@Home team, where the robot (TIAGo from PAL Robotics) already exists and has undergone modifications.

- **1x Camera:** Orbbec Astra S [1];
- **1x Inertial Measurement Unit:** Pixhawk PX4 [2];
- **2x 2D-LiDAR:** Hokuyo URG-04-LX-UG01 [3];
- **1x 3D-LiDAR:** Ouster OS1 [4];
- **1x Onboard ASUS computer:** Intel i5 CPU, 8 GB RAM and 250 SSD hard disk
ASUSTek Computer Inc., H110T, Rev X.0x, 191161616501603 [5];
- **2x Laptop:** i7 CPU, 16GB RAM, 512GB SSD and NVIDIA RTX 3050;
- **1x 2.5G Switch:** TP-Link TL-SG108-M2 [6];
- **1x USB-A Cable:** Connects Orbbec Astra S to robot's internal computer;
- **3x UBS-A - USB mini A Cables:** Connects Hokuyo sensors and Pixhawk to robot's internal computer;
- **2x LAN - LAN Cables:** Connects robot's internal computer and Laptop to Switch;
- **2x Type H Barrel - Mini fit Cable:** Connects Ouster sensor and Switch to robot's power supply (12V).

The diagram below illustrates the various connections of the Navigation module within the TIAGo robot:

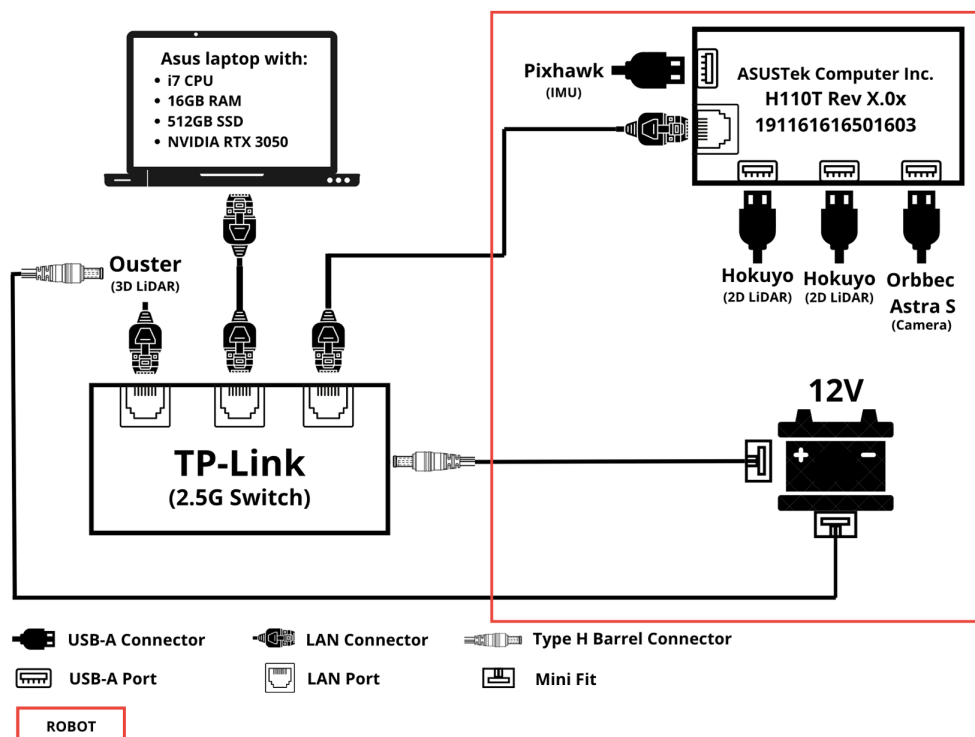


Figure 1: Connections Scheme

Below are visual representations of key components from the materials list with the respective links:



Figure 2: Orbbec Astra S



Figure 3: IMU - Pixhawk PX4



Figure 4: Hokuyo URG-04-LX-UG01



Figure 5: Ouster OS1

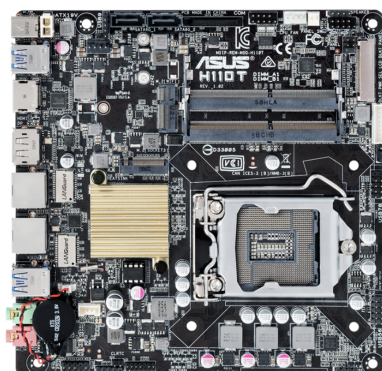


Figure 6: H110T Rev X.0x



Figure 7: TP-Link TL-SG108-M2

References

- [1] «Astra S — Orbbec 3D». Accessed March 8, 2024. Available at: <https://shop.orbbec3d.com/Astra-S>.
- [2] Carousell. «*Original* Pixhawk Autopilot». Accessed March 8, 2024. Available at: <https://www.carousell.sg/p/original-pixhawk-autopilot-163177615/>.
- [3] Génération Robots. «Hokuyo URG-04-LX-UG01 Laser Range Finder for Mobiel Robots - Hokuyo». Accessed March 8, 2024. Available at: <https://www.generationrobots.com/en/401434-hokuyo-urg-04-lx-ug01-laser-range-finder-hokuyo.html>.
- [4] «Ouster Multi Layer 3D-LiDAR — MYBOTSHOP.DE, 5.355,00 €». Accessed March 8, 2024. Available at: <https://www.mybotshop.de/Ouster-Multi-Layer-3D-LiDAR>.
- [5] ASUS Global. «H110TMotherboardsASUS Global». Accessed March 8, 2024. Available at: <https://www.asus.com/motherboards-components/motherboards/prime/h110t/>.
- [6] Orbita Digital. «TP-LINK TL-SG108-M2 switch de rede Preto». Accessed March 8, 2024. Available at: https://www.orbitadigital.com/pt/rede-telefoniaswitch/31409-tp-link-tl-sg108-m2-switch-de-rede-preto.html?gad_source=1&gclid=CjwKCAiA6KWvBhAREiwAFPZM7vm7VwaCAx8QorCiXTCN92hXaAC0iYq3qpEqCG243w-Q5kUQyXZSJRoCj-IQAvD_BwE.