Search and Surveillance Robot

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System Block Diagram
Goals:

• Build Z-Y servo mount for navigation sensors and video camera, calibrate sensors and setup up sensor interface. Decode data from sensors so that it can be easily used further downstream. Develop an AI program that uses sensor data to create a map of the local area. The map is then used for navigation purposes in order to further develop a universal map.

• Develop a GUI frontend to remotely control the robot in real-time from a computer, complete with a stream from the robot’s camera. Develop an algorithm that uses the generated map to autonomously navigate the area.

• Build 3D scanner assembly to scan objects encountered on the map. Write code to extract data from the secondary LIDAR and convert to xyz coordinates and a triangle list which can be rendered to view the object.

• Create a supplementary power system to supply enough power for the robot to operate for a sufficient amount of time and efficiently power sensors and devices.