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S.A.M.I.E (Pronounced Sammy)

- S.L.A.M
- Automated
- Mobile
- Intelligent
- Explorer

S.A.M.I.E. will be a fully automated robot capable of mapping obstacles in an unknown environment and use the gathered data to navigate without colliding with any mapped obstacle. It will use a Raspberry Pi to communicate with the Arduino to drive the robot and gather and extrapolate meaning from the LiDAR sensor. S.A.M.I.E. should be able to generate a human viewable version of its generated map, potentially as a image. This image will be displayed on a simple web page it hosts or dumped to a usb drive. S.A.M.I.E will be built from our current robotic platform with the LiDAR sensor mounted on it.

Features
- LiDAR based mapping based on the S.L.A.M algorithm.
  - This continually produces a map of the environment. Uses this to determine the robot's position in the environment.
- Obstacle avoidance based on generated map.
  - Using this map move around the environment and avoid any obstacles in its path.
- Export generated map to image.
  - Create a human viewable image of the generated map and export it at some interval.
- A simple web interface hosted on the Pi to view the most recent generated map and the robots estimated position and orientation in the map.