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I decided on a system of sensors consisting of 3 sonars and a compass, allowing for navigation in a box or the corner of a room. I researched PID control mechanics as a likely option for sensor interpretation and navigation control. I read about Lagrangian mechanics as well, but don't think it will be necessary to implement in the robot's navigation.

Commentary on Laboratory

I had two problems which my TA resolved: I did not know how to access my board's terminal from a Windows computer, and my oscilloscope was incorrectly set to 10x multiplication.

I also had difficulty getting my board to consistently read the output of the Sharp IR sensor I was using. The oscilloscope showed that the output was very noisy, so I put a bypass cap across its power input at my TA's suggestion. This appeared to result in no change, so I moved that capacitor to bridge the sensor's output and ground. The scope indicated that the output was significantly smoother, and my board's reading were consistent afterwards.