Robot Assignment

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***Abstract*—We were required to implement a robot system to perform a task similar to the one assigned to participants at the AAAI Mobile Robot Competition in 1996[1]. We did various things to complete the task.**

I. Background

A. Robot Motion

holonomic robots, PID control, reactive control

B. Localisation

Bayes filter, Kalman filter, particle filter (MCL), small section about mapping—still an active area of research in robotics. Mention SLAM, which has been pretty much solved.

C. Route Planning

PRM (sampling methods, graph search), RRT

D. Exploration

frontier based techniques

E. Robot Vision

II. Design

A. System Structure

brief ROS description, callback based system, finite state automaton

B. Platform

Stuff about the pioneer—available sensors, some data about its size, specifications, our additions to it. Kinect specs. Include a picture of the robot with the kinect on it.

III. Experimentation

A. PRM

B. Vision

C. Exploration

IV. Discussion

A. Performance

B. Potential Improvements

C. Conclusions

References

[1] D. Kortenkamp, I. Nourbakhsh, and D. Hinkle, "The 1996 aaai mobile robot competition and exhibition," in *AI Magazine*, vol. 18, 1997.