

Final project information

Final projects are to be done in teams of 2–3 students and should implement or apply some general techniques to particular situations or problems. In other words, I want you to formulate a reasonably general solution to a problem rather than hack something together for a specific situation. Projects must implement some algorithm on a real robot. (Presumably this will be the robot in my lab, but if you have a robot you can use, we can talk about it.)

Think of the final project as a “mini research project” instead of a “prepackaged assignment.” I don’t expect that projects will be original research, though, especially given our limited time frame.

I will suggest a number of final project topics; hopefully, most of you will choose one of these to work on. If you have an idea for a different final project, we can talk about it.

Here are the required components of your final project:

- **Project proposal:** Your project proposal should describe what you’re going to do, some details on how you will do it, a brief synopsis of relevant background, and what results are expected. The proposal should be no longer than 1 page.

You should plan on giving me a draft of your proposal by Monday March 29. I will give you some feedback on the proposal, and you should turn in a final proposal on Thursday April 1.

- **Background reading:** you should find research papers related to your project, at least two per team member. These might describe algorithms that you are implementing or might simply be background material. Think of two papers per student as a minimum — you will probably find that you’ll need or want to look up more papers than this. For most of the projects, I will be able to point you to a few papers.

I will ask you to turn in reading reports on two papers per student (due dates TBA). Your papers may be either journal papers from one of the following journals:

- IEEE Transactions on Robotics and Automation
- International Journal of Robotics Research
- Robotics and Autonomous Systems
- Computational Geometry and Applications

or conference papers from one of the following conferences:

- IEEE International Conference on Robotics and Automation (ICRA)
- IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)

There are other sources of papers in robotics; check with me if you want to use an article from a source not on the lists above.

- **Presentation:** we will set aside a class towards the end of the semester for short (around 10 minute) presentations from each group. You won’t be done with your project by then, but you should be able to describe the problem, the background, and some preliminary results.
- **Demonstration:** you will have to arrange an interactive demonstration with me. By “interactive” I mean that I should be able to change something about the system, for example a parameter value, obstacle configurations, robot initial positions, etc.
- **Report:** a written report on your project and its results. More details on the written report will be made available later.