Projects

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Overview

- goal is have project groups and ideas finalized by end of next week
- please come talk to us during OH and section
- today will we think through an example project to show you what we expect
Topics

- force control
- passivity
- learning by demonstration
- human-robot collaboration
- reactive motions
Example

make robot fight a human with a "lightsaber"
Formulating the problem

- how to simplify problem and specify it?
- what kind of sensors and hardware are you going to use?
Formulating a solution

- what subsystems are needed?
- for each subsystem, what is the abstraction provided, and how will it be implemented
- how will you test the performance of the subsystems
- how will you test and integrate the pieces
How will you partition the work

- assign members to tasks
  - Do what you want to learn. We are here to help.
- split hardware/software work
Discussion time

- what are your interests?
- what kind of experience do you have?
Proposal

- short 1 page project proposal by the 19th, 1 per group
- include your names and emails
- list the topics or areas that your project falls into
- give a high level idea of the implementation
  - what sensors do you need?
  - what kind of control is necessary?
  - what hardware will you use?
- a proposed week by week schedule of your objectives
  - break down tasks between group members

- we will get back to you with feedback and adjust things as needed
Some project ideas
Passivity controller for teleoperation

https://stanfordrobotics.atlassian.net/wiki/display/TEL/Control+Framework
3D dynamic surface traversal

https://stanfordrobotics.atlassian.net/wiki/display/TEL/Control+Framework
Robotic learning through demonstration

https://stanfordrobotics.atlassian.net/wiki/display/TEL/Control+Framework