Project Ideas

Link to GSI approved projects: <https://docs.google.com/document/d/1cTUckJ7WCwtsTk1lFzlJ5m44x-0wfgp3tp_qnoWOsmY/edit>

Mini proposal:

• name and contact information of each team member (full name, SID, email address);

• (brief) qualifications of each group member (department, previous experience, etc.); and

• project idea(s) and a brief description thereof.

1. **Robot Soccer**

Simulate a game of soccer between two autonomous robot teams in a 2D simulation environment of your choice. Things to consider are:

* + Ball sensing paradigm: how do players collect information about the location of the ball? Do they all always have perfect knowledge, or do they only know where the ball is when they point a laser scanner toward it, or sense it in some other way?
  + Communication paradigm: how much information do teammates share? Do they all always share their current locations and strategies with each other or must the robot sense each other's location?
  + Path planning and collaboration: how do the robots navigate to a moving ball and intercept in such a way as to deflect it to a desired direction? How do teammates collaborate with each other to play defensively or offensively to score goals?

1. **Object manipulation in 3D with millirobots**

Tiffany’s research project’s goal is to have a small team (3-4) of millirobots cooperate in order to move a rigid object in a 3 dimensional space. For this project, the object will be a fallen chair and the robots’ goal is to upright it. This project will be using V-REP and ROS as well as simulations of Kamigami robots. As the project is still in its very early stages (and subject to change) the exact project guidelines for a 106A/206A project group is still yet to be determined.