ME 115(b) Final Projects

(Spring 2002)

Like last quarter, students can choose to do a final project instead of taking a written final exam. Below are some suggestions for the ME 115(b) final project. Alternatively, you can select your own project, subject to my approval. While I would prefer individual projects, group projects are allowed with my consent. The quality of the group projects should be proportional to the number of students involved.

Suggestions:

1. **Simulate the contact equations.** Good candidates would be an ellipse on a sphere. This would consist not only of an implementation of the rolling equations, but a graphical simulation of two bodies as well. The use of Mathematica is highly suggested.
2. **Simulate a redundancy resolution scheme.** In a previous homework, you simulated the simplest pseudo-inverse redundancy resolution scheme. Try simulating a more complicated scheme which includes a null space projection term. Candidate criteria for null space projection criteria are obstacle avoidance and/or manipulability optimization.
3. **Develop a method to find the singularities of a Stewart Platform Mechanism.**

Final Project Grading and Time Table

Both the final project and the take home final exam are due at 5:00 pm on the last day of finals. The guidelines for the final project submission are the same as that from the first quarter. I.e., the write-up of your project should include: However, the write-up of each completed project should consist

- **A summary** that details the nature of the project, the motivation for the project, the scope of the project, and the approach taken to solve the project.
- **The details** of how the project was solved. This might consist of analytical derivations, software flow charts, etc.
- **The "output"** of the project. This will consist of a piece of hardware, a simulation (which is captured by images and code), or an equation.
- **A conclusion** that summarizes shortcomings of the project and future possible improvements.