ME 751 Final Project Proposal

Problem Statement

To further implement simEngine3D with options for

- Provide model definition through an input file (.txt or an excel file or any other formats)
- All types of joints and constraints discussed in class
- TSDA
- Friction and contact, implemented via penalty

Motivation

Implement what all has been covered in the lectures. Chose the default project as it has defined objectives and deliverables.

How you plan to go about it.

Tasks	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Incorporate all the joints and constraints						
Update the code to take inputs from an external file that has model definition						
Change the code to generic form for any number of bodies and constraints						
Incorporate Translational Spring-Damper-Actuator (TSDA)						
Add support for friction and contact via penalty approach						
Code cleanup, debugging and Report						

How you will demonstrate what you accomplished:

I would like to model the FSAE car suspension system. I have done that using commercial tools but the results weren't satisfactory. Hopefully I can continue building on my simEngine2D to analyze the suspension system.

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Deliverables:

1. A report with details on the theory, assumptions and implementation. It will also include results from different types of analysis carried out on the input model.
2. Code for simEngine3D
3. Will try for a short animation of the model.

Other remarks:

Couldn’t think of other project ideas as was running out of time because of exams and classes. I would like to do a Fluid Solid Interaction based modeling and simulation of water flowing through pipes under very high pressure (modeling of a hydropower penstock). I could try that after finishing up the fluid dynamics part of the course.