Memo

**To**: Dr. Luis Rodriguez

**From**: A.R.C. - Logan Beaver, Justin Campbell, Tyler Paddock, and Ron Shipman

**Date**: February 13, 2015

**Re**: A.R.C.’s Update for Week 9

**Problem Statement:**

Milwaukee School of Engineering (MSOE) participates in community outreach programs where science, technology, engineering, and mathematics (STEM) topics are demonstrated to encourage younger generations to enter into STEM based degrees and careers. Having an automated control system to demonstrate and interact with would increase the excitement at these outreach programs. Development of a robot with pneumatic locomotion for the Milwaukee School of Engineering’s controls classes would give students a first-hand experience with complex control systems.

**Last Week’s Accomplishments:**

* + Updated dynamic simulation in MATLAB
  + ???????

**Goals for Next Week:**

* + Have pneumatic hardware selected and ready to order
  + Update robot hull with cylinders and positions
  + Complete more thorough FEA analysis based on cylinder positioning
  + Enhance gait to reduce knee jerk
  + Develop equation for impulse force applied to foot on step
  + Debug communication system
  + Create and deliver Executive Summary of project *in less than one week!*
  + Update design report
  + Create content outline for final presentation *in two weeks!*
  + *????*

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| --- | --- | --- | --- | --- |
| **Date** | **Person** | **Task** | **Time [Hours]** | **Total Man-Hours** |
| 2/9/15 | Logan | -Update dynamic model | 2 | 40+ |
| 2/10/15 | Logan | -Develop pneumatic circuit calculator -Update dynamic model | 7 |
| 2/11/15 | Logan | -Update pneumatic circuit calculator  -Update and debug dynamic model  - Create initial ANSYS FEA simulation | 13 |
| 2/12/15 | Logan | -Update and fix small bugs in simulation  -Redesign legs in SolidWorks  -Update all simulations to most accurate data  -Run worst case FEA simulation with dynamic simulation results  -Calculate maximum range of motion and desired piston stroke | 10 |
| 2/13/15 | Logan | -Confirm late night simulation results  -Compile findings from 2/13 into easy to follow report | 3 |
| 2/10/15 | Team | -weekly meeting | 2 |
| 2/11/15 | Team | -weekly meeting | 2 |
| 2/13/15 | Team | -weekly meeting | 1 |
|  | Tyler | ??? |  |
|  | Ron | ??? |  |
| 2/9/15 | Justin | -Run ANSYS FEA simulation on chassis, thigh, and shank | 4 |
| 2/11/15 | Justin | -Worked to find leg lengths and piston positions to allow for desired stroke and piston pressure | 5 |
| 2/12/15 | Justin | -Reworked legs  -Redesigned chassis and legs to accommodate for pistons | 12 |  |