Actuated Passive Dynamic Walker Perturbation Control: Stable Walking with Varying Upper Body Mass and Ramp Angle

Update #1 (4/24/2019)

Rebecca Agustin, Shang-Yun (Maggie) Wu

For our project we have been working on creating a compass gait simulation where we can dynamically change the mass and ramp angle at run time. We were able to recreate the basic compass gait simulation within the Jupyter notebook with a corresponding animated visualization. However, we have encountered problems with the provided pydrake framework since the premise for our project requires altering parameters that the pydrake compass gait class expects to remain constant. To address this, we plan to create a custom compass gait class based off the original C++ implementation that will allow us to perturb the simulation with respect to the compass gait mass and ramp angle during our simulations. At Professor Tedrake's recommendation, we will also be referring to the SLIP python implementation as a basis for creating a framework that is appropriately flexible. Upon completion of the basic modelling, we will tune our dynamics to work for various, dynamically changing conditions.