Trajectory Optimization Framework

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1 Introduction

This framework is designed for the optimization of trajectories for robotic systems. It can handle underactuated and hybrid systems. In the future, it will likely have support for multiple "phases", or time periods in which specific dynamics are enforced.

The framework makes use of the MATLAB Symbolic Toolbox to aid in problem formulation and manipulation. The actual optimization, however, is almost always numerical. By keeping the problem in a symbolic form, we allow for the implementation of a mode where the optimization algorithm and problem are formulated together, leading to a final solver optimized for the specific problem's structure.

This document gives a basic description of how to use the framework (in the future, there should be code samples to demonstrate how to properly use this framework). It also covers the architectural design of the framework and details on some of the most important algorithms contained within the framework.