Use of Model Predictive Control (MPC) for Rocket Altitude Correction

Nikhil Peri, Anthony Lin, Manit Ginoya, Paul Buzuloiu
ECE Department, Indian Institute of Science
{nperi104, alin102 mgino015, pbuzu025}@uottawa.ca

***Abstract*—**
KeywordsModel Predictive Control, Aerospace.

I. Introduction

Rockets unlike other aircraft have high speed and dynamic flights, as a result rocket control systems have to be extremely responsive and precise. Classical control systems based on observed sensor feedback would not be able to meet the demands of rocket flight since the latency between plant actuation affecting the the physical world and detecting that change through sensor observations is too slow for such dynamic flight enviroments. Model Predictive Control (MPC) solves these problems by introducing state estimation. This process involves maintianing a kenetic