

Problem Statement and Goals

Mechatronics

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Table 1: Revision History

Date	Developer(s)	Change
Date1	Name(s)	Description of changes
Date2	Name(s)	Description of changes
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1 Overview

Machines are designed by humans, for humans, to make everyday life easier. Until a machine has a method to control it, either through human control or autonomous control, they are nothing more than a paperweight. In our everyday world, cars are a ubiquitous machine used to transport people and goods to their destination, and thereby are a key pillar of a productive economy and society. In the 21st century, vehicles are becoming more interconnected and sophisticated than ever and use computers to control almost every subsystem of the vehicle. Control systems encapsulate the “brains” behind such machines, allowing them to interpret their environment using sensors, determine a desired state, and manipulate the environment using actuators to achieve the desired state. They convert a physical stimulus (from the environment, including a user) into a control signal for a component. Some examples of control systems seen in modern cars today are engine/transmission controls, HVAC controls, battery management (in hybrid/electric vehicles, anti-lock braking (ABS) and electronic stability program (ESP).

1.1 Inputs and Outputs

[Characterize the problem in terms of “high level” inputs and outputs. Use abstraction so that you can avoid details. —SS]

1.2 Stakeholders

1.3 Environment

[Hardware and software —SS]

2 Goals

3 Stretch Goals