



SOFTWARE ATELIER: SIMULATION, DATA SCIENCE & SUPERCOMPUTING

SPRING 2019

Image Segment Detection

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March 6, 2019

Contents

1	Executive Summary	2
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1 Executive Summary

The ultimate goal of this project was to design a Thermal Energy Control System (TECS) that will heat, maintain, and cool the core temperature of a workpiece, specifically an aluminum cylinder, for a user-defined amount of time following a user-defined temperature profile. The final design, detailed in this report, is centered around a Thermoelectric Module (TEM) that is used to both heat and cool the workpiece. Additional features include a fan, used to bring the workpiece to room temperature, and a housing built to protect the user from high temperature surfaces. The total system cost \$565 including all materials for the physical build, as well as materials used to test during the design process. This process was informed by the constraints given by the customer or industry standards. These along with the resulting critical design decisions made to create the TECS are discussed in this report.