

MECH0020 Individual Project
2021/22

Designing a Lap Simulator for the Shell Eco-marathon

Student: Hasha Humayon Dar

Supervisor: Professor Tim Baker

Word count: FILL

University College London
Torrington Place
LONDON WC1E 7JE

Declaration

I, Hasha Humayon Dar, confirm that the work presented in this report is my own. Where information has been derived from other sources, I confirm that this has been indicated in the report.

Abstract

The development of simulating performance parameters for racing vehicles has become increasingly important in a digital world. Simulations provide highly customisable virtual environments to test components, changes and strategies. Hence, the development of software that can give an accurate idea of a vehicle's performance in a variety of configurations would prove to be an advantage. Traditionally, the UCL Racing Team has conducted in-person testing of their vehicles at race tracks or similar. However, due to COVID-19, this has become difficult in the past two years. Virtual testing can provide a cheaper, more time efficient means of testing. The development of a virtual model of the vehicle would allow the team to test various changes to the vehicle, without having to prototype and arrange for in-person testing.

This report focuses on building a performance based model of the UCL Racing Shell Eco-marathon vehicle, which generates a lap time for the vehicle. The Shell Eco-marathon is a competition at the school and university level for students focusing on energy optimisation in vehicles. The aim of the competition is to develop new innovations in energy efficiency for vehicles on the road with the idea of reducing carbon emissions (Shell 2022)

Acknowledgements

Contents

List of Figures

List of Tables

References

Shell (2022), 'Shell eco-marathon - our mission'.

URL: *<https://www.makethefuture.shell/en-gb/about>*