College of Engineering, Design and Physical Sciences

Department of Engineering and Design

ASSIGNMENT SUBMISSION FORM

Please note: that no course work will be accepted without this cover sheet.

Please ensure: that you keep a copy of work submitted and retain your receipt in case of query.

Student Number:	**SPO ID Number** (Office use only):	
Course:		**Level:**

MODULE	
Module Code:	**Module Title:**
Lab / Assignment:	**Deadline:**
Lab group (if applicable):	**Date Stamp** (Office use only):
Academic Responsible:	
Administrator:	

Please note: that detailed feedback will be provided on a feedback form.

✂.....

RECEIPT SECTION (Office Copy)	
Student Number:	**SPO ID Number** (Office use only):
Student First Name:	**Student Last Name:**
Module Code:	**Module Title:**
Lab / Assignment:	
Lab group (if applicable):	**Deadline:**
Academic Responsible:	**Number of Days late:**

DECLARATION	
I have read and I understand the guidelines on plagiarism and cheating in the Handbook and I certify that my contribution to this report fully complies with these guidelines. I confirm that I have kept a copy of my work and that I have not lent my work to any other students.	
Signed:	**Date Stamp** (Office use only):

✂.....

RECEIPT SECTION (Student Copy)	
Student Number:	**Student Name**:
Lab / Assignment:	
Lab group (if applicable):	**Module Title:**
Academic Responsible:	**Deadline:**
Module Code:	**Date Stamp** (Office use only):

The University penalty system will be applied to any work submitted late.

IMPORTANT: You **MUST** keep this receipt in a safe place as you may be asked to produce it at any time as proof of submission of the assignment. Please submit this form with the assignment attached to the Department of Design Education Office in the Michael Sterling Building, room MCST 055.

College of Engineering, Design and Physical Sciences

Department of Engineering and Design

ASSIGNMENT SUBMISSION FORM

Please note: that no course work will be accepted without this cover sheet.

Please ensure: that you keep a copy of work submitted and retain your receipt in case of query.

Student Number:	**SPO ID Number** (Office use only):	
Course:		**Level:**

MODULE	
Module Code:	**Module Title:**
Lab / Assignment:	**Deadline:**
Lab group (if applicable):	**Date Stamp** (Office use only):
Academic Responsible:	
Administrator:	

Please note: that detailed feedback will be provided on a feedback form.

✂.....

RECEIPT SECTION (Office Copy)	
Student Number:	**SPO ID Number** (Office use only):
Student First Name:	**Student Last Name:**
Module Code:	**Module Title:**
Lab / Assignment:	
Lab group (if applicable):	**Deadline:**
Academic Responsible:	**Number of Days late:**

DECLARATION	
I have read and I understand the guidelines on plagiarism and cheating in the Handbook and I certify that my contribution to this report fully complies with these guidelines. I confirm that I have kept a copy of my work and that I have not lent my work to any other students.	
Signed:	**Date Stamp** (Office use only):

✂.....

RECEIPT SECTION (Student Copy)	
Student Number:	**Student Name**:
Lab / Assignment:	
Lab group (if applicable):	**Module Title:**
Academic Responsible:	**Deadline:**
Module Code:	**Date Stamp** (Office use only):

The University penalty system will be applied to any work submitted late.

IMPORTANT: You **MUST** keep this receipt in a safe place as you may be asked to produce it at any time as proof of submission of the assignment. Please submit this form with the assignment attached to the Department of Design Education Office in the Michael Sterling Building, room MCST 055.

College of Engineering, Design and Physical Sciences

Department of Engineering and Design

ASSIGNMENT SUBMISSION FORM

Please note: that no course work will be accepted without this cover sheet.

Please ensure: that you keep a copy of work submitted and retain your receipt in case of query.

Student Number:	**SPO ID Number** (Office use only):	
Course:		**Level:**

MODULE	
Module Code:	**Module Title:**
Lab / Assignment:	**Deadline:**
Lab group (if applicable):	**Date Stamp** (Office use only):
Academic Responsible:	
Administrator:	

Please note: that detailed feedback will be provided on a feedback form.

✂.....

RECEIPT SECTION (Office Copy)	
Student Number:	**SPO ID Number** (Office use only):
Student First Name:	**Student Last Name:**
Module Code:	**Module Title:**
Lab / Assignment:	
Lab group (if applicable):	**Deadline:**
Academic Responsible:	**Number of Days late:**

DECLARATION	
I have read and I understand the guidelines on plagiarism and cheating in the Handbook and I certify that my contribution to this report fully complies with these guidelines. I confirm that I have kept a copy of my work and that I have not lent my work to any other students.	
Signed:	**Date Stamp** (Office use only):

✂.....

RECEIPT SECTION (Student Copy)	
Student Number:	**Student Name**:
Lab / Assignment:	
Lab group (if applicable):	**Module Title:**
Academic Responsible:	**Deadline:**
Module Code:	**Date Stamp** (Office use only):

The University penalty system will be applied to any work submitted late.

IMPORTANT: You **MUST** keep this receipt in a safe place as you may be asked to produce it at any time as proof of submission of the assignment. Please submit this form with the assignment attached to the Department of Design Education Office in the Michael Sterling Building, room MCST 055.

Brunel University London

College of Engineering, Design and Physical Sciences
Department of Engineering and Design

Assignment
Workshop EE5571

Embedded Systems

Tobias Schwarz
Student Number: 1744864
Stephan Dittmann
Student Number: 1744874
Roland Flat
Student Number: 1744872

Supervisor:
Satikidis Dionysis

Year of Submission: 2018

Contents

List of Figures

Abstract

Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet. Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet. Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet.

Duis autem vel eum iriure dolor in hendrerit in vulputate velit esse molestie consequat, vel illum dolore eu feugiat nulla facilisis at vero eros et accumsan et iusto odio dignissim qui blandit praesent luptatum zzril delenit augue duis dolore te feugait nulla facilisi. Lorem ipsum dolor sit amet, consectetuer adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat.

Ut wisi enim ad minim veniam, quis nostrud exerci tation ullamcorper suscipit lobortis nisl ut aliquip ex ea commodo consequat. Duis autem vel eum iriure dolor in hendrerit in vulputate velit esse molestie consequat, vel illum dolore eu feugiat nulla facilisis at vero eros et accumsan et iusto odio dignissim qui blandit praesent luptatum zzril delenit augue duis dolore te feugait nulla facilisi.

Nam liber tempor cum soluta nobis eleifend option congue nihil imperdiet doming id quod mazim placerat facer possim assum. Lorem ipsum dolor sit amet, consectetuer adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat. Ut wisi enim ad minim veniam, quis nostrud exerci tation ullamcorper suscipit lobortis nisl ut aliquip ex ea commodo consequat.

Duis autem vel eum iriure dolor in hendrerit in vulputate velit esse molestie consequat, vel illum dolore eu feugiat nulla facilisis.

1 LapOps

1.1 Introduction

2 System Analysis

2.1 Use Cases

3 Mathematical Models of Identifying Sections

3.1 DataModification

3.1.1 DataModel

3.1.2 Smoothing

3.1.3 Savitzky-Golay Filtering

3.2 Section Identification

The following section will describe the solution for the identification of sections. And is split into two parts. The first explains the rough identification of sections. These sections will then be given to a classification method that clearly identifies the type of section, be it a curve or a straight line.

3.2.1 Identification

The identification is split into three parts that will be executed serial. After smoothing and filtering of the dataset. The x-axis acceleration values will be split into two groups. These split is happening with a singular x value representing a threshold.

3.2.2 Classification

3.3 Section Rating

4 LapOps Application

4.1 How to use it

4.2 Additional Information

5 Conclusion