

Boxing Analyser

Project Engineering

Year 4

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Bachelor of Engineering (Honours) in Software and Electronic Engineering

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**Declaration**

This project is presented in partial fulfilment of the requirements for the degree of Bachelor of Engineering (Honours) in Software and Electronic Engineering at Galway-Mayo Institute of Technology.

This project is my own work, except where otherwise accredited. Where the work of others has been used or incorporated during this project, this is acknowledged and referenced.

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**Acknowledgements**

I would like to thank all the lecturers for helping me achieve this project and guide me on the correct path to completing this project successfully. A special thankyou to Paul Lennon and Brian O Shea as these two played a big part in the guidance of this project. Without them this would not have been achieved and I would like to send my sincerest thankyou to everyone who played a part.

**Table of Contents**

[1 Summary 6](#_Toc64975700)

[2 Poster 7](#_Toc64975701)

[3 Introduction 8](#_Toc64975702)

[4 Background 9](#_Toc64975703)

[5 Project Architecture 10](#_Toc64975704)

[6 Project Plan 11](#_Toc64975705)

[7 Heading 12](#_Toc64975706)

[7.1 Referencing 12](#_Toc64975707)

[7.2 Notes on Content 13](#_Toc64975708)

[8 Ethics 14](#_Toc64975709)

[9 Conclusion 15](#_Toc64975710)

[10 Appendix 16](#_Toc64975711)

[11 References 17](#_Toc64975712)

# Summary

As part of my final year studying BEng Software and Electronic Engineering, I was required to complete a project engineering module. The goal of this project was to attempt to solve and ongoing issue for amateur fighters. As a fighter myself I find it difficult to monitor statistics and analyse previous bouts. This was the inspiration behind the project as I am passionate about combat sports and have a fascination with the constant improvement aspect.

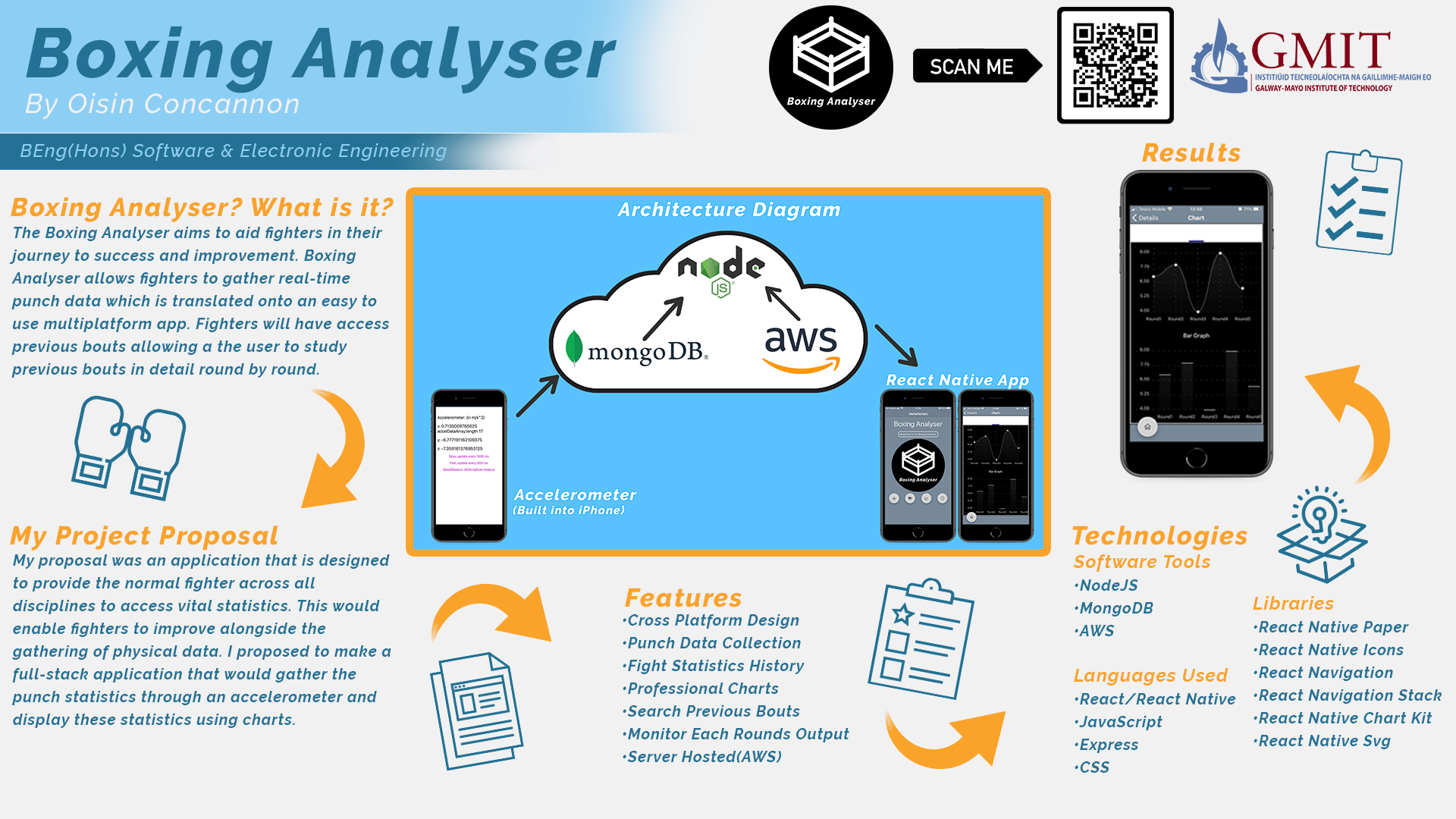
This module took place over both semesters and this project came to fruition in the very first week of the first semester. The aim of “Boxing Analyser” was to provide users with real-time statistics as well as the ability to study previous bouts. It was planned to generate charts based on the punch output each round. This would give the fighters or coaches’ real-time statistics visually in a practical way. The approach was simple, I researched similar products on the market and I found very little. After this I was forced into a lot of trial and error. I had a very clear image of what I wanted to achieve and once the vision was clear I just had to figure out the path to get to the result.

I originally planned to make a full stack web application using the framework Express however I was guided away from this route by my supervisor. I settled on creating a cross platform application using React Native. This would give my application versatility and would be compatible with all operating systems. React Native was a key part in the completion of this project as I was able to gather a strong knowledge on the framework quickly.

As planned I completed the project and my application is gathering real time statistics and pushing them to my database. I also have a feature which allows fighters to search previous bouts and view the charts of that specific bout.

In conclusion, I was very satisfied with how this project transpired. If I could plan my next step for this particular project I would working on the accelerometer side and start to detect specific punches and chart these punches whether it’s a straight punch, hook or uppercut.

# Poster



# Introduction

Firstly as an introduction to this report I would like to introduce myself. My name is Oisin Concannon and I am a final year student studying Software and Electronic engineering. As part of this final year we are tasked with the design of a final year project. Due to my immense interest in martial arts I decided to base my project on this topic as I feel I have the knowledge and the passion to design something useful.

This was a yearlong module and it was over the duration of seven months. Over the course of two semesters I have put together the “Boxing Analyser”, this project is very close to what I had envisioned at the beginning of the year. With some more time I would make some useful additions to make the application even more feature based and user friendly.

# Boxing Analyser

Martial arts is not as popular as some mainstream sports and people can often be misinformed on the subjects. Hopefully in this section I can give more of an insight into the inspiration and the background for this project

# Project Architecture

Your project architecture diagram should go here. This is an important section, and one most readers of your report will view.

Your diagram should be self-documenting. Use subsequent sections in your report to elaborate on technologies / software / hardware in your diagram.

Figure 4‑1 Architecture Diagram

# Project Plan

# Heading

This is an example heading for a section in a project. You choose your sections to suit your project.

## Referencing

This is a subheading, use subheadings to break up a large topic into smaller sections.

IEEE referencing style is recommended the default style to choose for citations and referencing, however if you are familiar with a different referencing style then you can use that.

When you need to reference add a citation in the relevant sentence, usually at the end, before the full stop. Then have this numbered citation referenced in the list of references at the end of the document.

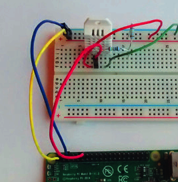
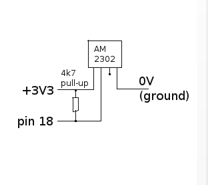
Here I might write something about something, e.g. image processing, and I need to cite my sources, like this [1]. Here I have used MS Word’s ‘Insert Citation’ feature, with IEEE style selected, to create that number inside brackets. Here’s another citation [2]. Word increments the number automatically. I can fill in the details about my reference now or later. I can then go the end of the document and create a page of references automatically. See the demonstration in class on this (also recorded via Teams). Here I am adding another citation [3]. And another [4].

You then need to insert a References section at the end of the document. In Word, choose References->Bibliography->References. This will pull all your citations into a reference page, as shown at the end of this document. The References section in this document also includes examples of further references that have not yet been cited in the text – to demonstrate IEEE style for different types of resources, i.e. books/websites/lectures/source code/etc.

You could also manually add all your citations & references, without using MS Word’s citation & referencing wizards.

## Notes on Content

Photographs are not technical diagrams and are not a good substitute for professional technical diagrams. Use photographs to enhance a report, but not as a replacement for diagrams.



V

Figure 6‑2 A photograph is not a replacement for a circuit diagram

In describing software, you need diagrams and/or summaries of software design & layout. It is not sufficient to just paste some code. You should describe what your code is designed to do, in English. If you decided to put your code in functions or libraries or objects, describe this architecture. One good layout is to include a snippet(s) of code alongside an explanation. You do not have to explain every part of your code, pick the important parts.

Write out any mathematical equations or calculations that are important in your project and explain them.

Include details of any major problems or challenges you encountered in an area, and how you solved them.

# Ethics

Include a short section on ethical considerations in your project or in the field of study of your project.

# Conclusion

Write a short conclusion. What is the outcome of the project? Perhaps you have a product prototype, or some results, or a demonstratable system.

Do not use your conclusion to tell the reader what you might have done if you had more time, but keep it focussed on what you actually have done. You can mention future opportunities for further development of the work, but keep this part short.

# Appendix

# References

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