

COMP30040 Report

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Abbreviations and Acronyms

API Application Programming Interface

CNN Convolutional Neural Network

OCR Optical Character Recognition

Abstract

This is abstract text.

Declaration of originality

I hereby confirm that this dissertation is my own original work unless referenced clearly to the contrary, and that no portion of the work referred to in the dissertation has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.

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Acknowledgements

No need to include, but can if want to.

1 Introduction

1.1 Background and motivation

1.2 Aims and objectives

1.3 Report structure

2 Background and Literature Review

2.1 Overview of Related Systems

2.1.1 Vinyl Systems

Research into questions such as 'why do people like vinyl so much?' and 'why is it making a come-back?'. Traits distilled from this feed into later design choices (I have chosen to make a make a physical artefact with a mahogany base, because physicality and aesthetics are important the people who would potentially use this system).

2.1.2 Image Recognition

Papers that inform the use of different approaches, etc.

2.2 Legal and Ethical Considerations

3 Design

What did past-Jack set out to do?

3.1 Requirements Analysis

3.2 System Architecture

3.2.1 Technology Stack

All of the technologies used (TS, React, bun, Python, FastAPI, etc.), and why them specifically.

3.2.2 Design Choices

Particular broad and niche design choices made, and why, such as:

1. Why use a web approach for a localised device?
2. Why use an unorthodox 1-1 Websocket approach for client-server calls?

Also things such as 'point of truth handling', etc.

3.3 Front-end

3.3.1 User Interface

'No-UI' approach (or, more accurately, minimal UI)

Physical user interaction controls

3.3.2 Audio Playback

3.3.3 Remote Clients

'Remote Control' UI from an external device (mobile, etc.)

3.4 Back-end

3.4.1 Authentication

Might be redundant with the 'Security Considerations' information?

3.4.2 Metadata Retrieval

3.4.3 Hardware Interaction

3.5 Machine Learning Model Design

3.5.1 Dataset Collection

3.5.2 Model Architecture

3.6 Security Considerations

3.7 Testing Methodology

Design of tests and evaluations; plan for unit testing, model evaluation, etc.

4 Implementation

Details realised in practice, decisions made, etc.

Challenges encountered, how addressed, etc.

4.1 Front-end

4.1.1 Challenges Encountered

4.2 Back-end

4.2.1 Challenges Encountered

Maybe the power-cable low-voltage issues could be mentioned? Not sure how much there is to say...

4.3 Machine Learning Model

4.3.1 System Integration

Practice-driven discoveries, such as 'how much is not too much' when it came to model architecture and the Pi's specs.

4.3.2 Challenges Encountered

Internet Archive downtime!

5 Results

What was actually produced?

5.1 Software Artefact

5.2 Hardware Artefact

6 Evaluation

6.1 Machine Learning Model Performance

6.2 User Experience

6.3 Comparison with Existing Systems

6.4 Ethical Implications

7 Conclusions and future work

7.1 Conclusions

7.2 Future work

Appendices

A Project outline

Project outline as submitted at the start of the project is a required appendix. Put here.

B Risk assessment

Risk assessment is a required appendix. Put here.