

Rhythm Render

Interim Report

TU856

BSc in Computer Science

**John Hinch**

**C21718368**

**Dr Bryan Duggan**

School of Computer Science

Technological University, Dublin

**30/11/2024**

Abstract

This project presents the development of an innovative software tool that bridges the realms of digital music composition and 3D animation. The core of this tool is virtual MIDI sequencer interface that allows users to compose and manipulate musical sequences intuitively. Once a sequence is created, the software translates the data into a dynamic 3D visualization of a virtual performer or ensemble playing the sequence in real time.

The project aims to enhance the creative process by providing composers with a new medium for visualizing and experiencing their music. It also offers educational benefits, serving as a tool for learning about musical structure and performing dynamics. By merging MIDI sequencing with 3D animation, this software introduces a novel approach to interactive music visualization, with applications spanning music production, live performances, and multimedia art.

Declaration

I hereby declare that the work described in this dissertation is, except where otherwise stated, entirely my own work and has not been submitted as an exercise for a degree at this or any other university.

Signed:

\_\_John Hinch\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

John Hinch

30/11/2024

Acknowledgements

I would like to thank my supervisor Dr Bryan Duggan for all of their support and guidance.

Table of Contents

[1. Introduction 7](#_Toc119925914)

[1.1. Project Background 7](#_Toc119925915)

[1.2. Project Description 7](#_Toc119925916)

[1.3. Project Aims and Objectives 7](#_Toc119925917)

[1.4. Project Scope 7](#_Toc119925918)

[1.5. Thesis Roadmap 7](#_Toc119925919)

[2. Literature Review 8](#_Toc119925920)

[2.1. Introduction 8](#_Toc119925921)

[2.2. Alternative Existing Solutions to Your Problem 8](#_Toc119925922)

[2.3. Technologies you’ve researched 8](#_Toc119925923)

[2.4. Other Research you’ve done 8](#_Toc119925924)

[2.5. Existing Final Year Projects 8](#_Toc119925925)

[2.6. Conclusions 8](#_Toc119925926)

[3. System Design 9](#_Toc119925927)

[3.1. Introduction 9](#_Toc119925928)

[3.2. Software Methodology 9](#_Toc119925929)

[3.3. Overview of System 9](#_Toc119925930)

[3.X. Other Sections 9](#_Toc119925931)

[3.X. Conclusions 9](#_Toc119925932)

[4. Testing and Evaluation 10](#_Toc119925933)

[4.1. Introduction 10](#_Toc119925934)

[4.2. Plan for Testing 10](#_Toc119925935)

[4.3. Plan for Evaluation 10](#_Toc119925936)

[4.4. Conclusions 10](#_Toc119925937)

[5. Prototype Development 11](#_Toc119925938)

[5.1. Introduction 11](#_Toc119925939)

[5.2. Prototype Development 11](#_Toc119925940)

[5.3. Other Sections 11](#_Toc119925941)

[5.4. Conclusions 11](#_Toc119925942)

[6. Issues and Future Work 12](#_Toc119925943)

[6.1. Introduction 12](#_Toc119925944)

[6.2. Issues and Risks 12](#_Toc119925945)

[6.3. Plans and Future Work 12](#_Toc119925946)

[6.3.1. GANTT Chart 12](#_Toc119925947)

[Bibliography 13](#_Toc119925948)

# 1. Introduction

**As least 2 pages, but as many as you like**

## Project Background

Music Composition and visual art have long been intertwined, evolving parallel and influencing each other in various ways throughout history. The advent of digital technologies has expanded the boundaries of both fields, creating new opportunities for integration and real-tie interactivity.

## Project Description

This project is designed for personal entertainment use. It will

An overview of the project

Include a diagram

## Project Aims and Objectives

Overall aim and some milestones along the way to achieve the aim

* 5-9 objectives

## Project Scope

Project scope, what the project isn’t about

## Thesis Roadmap

One sentence explaining what each of the following chapters is about.

# Literature Review

## 2.1. Introduction

In this chapter …

## 2.2. Alternative Existing Solutions to Your Problem

Software you’ve looked into

## 2.3. Technologies you’ve researched

Programming languages, operating systems, etc.

## 2.4. Other Research you’ve done

Domain specific research

## 2.5. Existing Final Year Projects

## 2.6. Conclusions

# 3. System Design

## 3.1. Introduction

For this project I am using various

## 3.2. Software Methodology

## 3.3. Overview of System

## 3.X. Other Sections

## 3.X. Conclusions

# 4. Testing and Evaluation

## 4.1. Introduction

## 4.2. Plan for Testing

## 4.3. Plan for Evaluation

## 4.4. Conclusions

# 5. Prototype Development

**As least 2 pages, but as many as you like (but lots of code samples).**

## 5.1. Introduction

## 5.2. Prototype Development

## 5.3. Other Sections

## 5.4. Conclusions

# 6. Issues and Future Work

## 6.1. Introduction

## 6.2. Issues and Risks

## 6.3. Plans and Future Work

### 6.3.1. GANTT Chart

# Bibliography