Computing Guitar Fingerings
First Draft

Niki Stavropoulou
s1641718

Abstract
Needs to mention:

- the framework's purpose and the idea behind

- how the performer chooses fingerings (experience, practice)

- the importance of proper fingerings, the difficulty of evaluating them

- the difficulty of computing them (size, differs based on preference)

- the project's outcome

1   Introduction

Needs to include:

- general information on fingerings and the project

- what is the problem

- note on its potential [?]

- briefly the difficulties

- examples to better illustrate the problem

Subsections:

1.1   Guitar fingerings

Information on fingerings on string instruments and on the guitar

1.2   Division of the problem to chords and sequences

How it is different and chords cannot be treated the same

1.3   Difficulties and usefulleness

Preference, experience, habbit, search space, no actual definition of 'best' -just what is acceptable- and what this project can potentially offer. [should it be in the introduction]

1.4 Outline of the dissertation

Describe how the rest of the dissertation is structured

2 Background

Needs to include:

- the required information for someone who doesn't know guitar to understand
- description of the notation
- information on the technical part[?]
- relative work done, similarity/difference with this project

Subsections:

2.1 General guitar information

Eg. what are positions, different notations, on guitar notes can be played on more than one place, with images and examples

2.2 Techicalities

[So far I did not end up using a particular search algorithm, just implemented a tree and linked nodes, so no need for such a section?]

2.3 Refer to previous work

Describe similar work, projects that influenced my work and how

3 Description of the work undertaken

Needs to include:

- description of the framework
- parsing MusicXML, why this format
- explanation of the generation process
- how the scoring is done, the custon rules
- what problems occurred and how they were solved

Subsections:

3.1 The initial framework idea

The general thought behind the first approach, MusicXML, very briefly describe the overall process that will be further analysed

3.2 Fingerings generation

How they are generated, the imported file with all the combinations, what notes are taken into account (12 frets)

3.3 Sequences and chords

How chords were integrated to the sequence generation

3.4 Difficulties and solutions

What problems occured and how they were solved, with examples

3.4.1 Width limitation

3.4.2 Intermediate pruning

3.5 Custom rule scoring

How scoring a node is done, the imported file, there is no definition of 'best', so how the rules were decided. [maybe mention sight reading techniques since it influenced the rules?]

3.5.1 Analyse rules

[Should I include an explanation of each rule in subsections or just describe them and include their analysis with their results on the next section?]

3.6 GUI

Describe the user interface [just mention it?]

4 Results - Evaluation

Needs to include:

- analysis of the initial results
- the progress to make them better
- examples
- the final rules and why they were chosen specifically
- the final framework

Subsections:

4.1 Results with examples

4.1.1 First experiments

Their results and how they affected the rules

4.1.2 Furter refining the framework

How rules were chosen

4.2 Evaluation

Evaluation of the final framework and the results

4.2.1 Playability of the fingerings

Are they playable, at what extent, why, are they acceptable

4.2.2 Comparison with existing fingerings

How the framework performed compared to existing notation

4.3 Shortcomings

What did not go as expected or was not solved [Should this be only in the conclusion?]

5 Conclusion

Needs to include:

- general mention to the work done
- criticism on the final result
- extensions

Subsections:

5.1 Summary of the work done

5.2 Limitations - Shortcomings

5.3 Possible extensions

How could this project be extended, adapted

Appendix

- Code listing [One of the relevant projects contained this, but should there be a section in mine?]
- User guide [Maybe?]

References

[1] ... [The number of references is still relatively small, given the nature of the project it was expected but still is this a problem?]