Automatic Guitar Music Transcription and Identification of Fingering Information

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Abstract

The guitar is a very popular, if not, the most popular instrument with teenagers. It is very mobile and it grabs a lot of attention. Learning the guitar takes a lot of time if a person does not have a "musical ear". If they cannot find the notes on their own, they would have to solely rely on instructions. This is one of the reasons new guitar players tend to give up the guitar. Guitar tablature is the standard notation for the guitar. But it does not normally show the finger information. This is the problem addressed through this research.

Automatic music transcription (AMT) is the process of converting audio into a readable format programmatically. Systems incorporating AMT have been built to transcribe guitar tablature, and systems have been built which generates finger information for existing guitar tablature. A system which incorporates both the above mentioned system would aid guitar players to learn new guitar compositions efficiently. The gaps of existing research and products are analysed, and in order to fill that gap, a software is implemented. Improving or implementing a method for AMT will not be attempted, rather, the application will be made modular so that it can accommodate any AMT algorithm.

The purpose of this thesis is to present each phase gone through for a successful implementation and evaluation of a prototype as the proof of concept. A standalone application is implemented using Java as the programming language. Guitar tablature is subjective. With the correct notes, it can be played on multiple locations on a guitar. There is only good tablature and bad tablature. Results from the application is evaluated qualitatively and results from evaluation shows a promising future for this concept.

Keyword: Automatic music transcription, Guitar, Guitar tablature, Java, FFT, Geometric cost