

# **Research Proposal - Piano Auto Generated Score**

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- **Introduction**

This project is reading a piano piece to get the score, including chords. This project will mainly use pitch detection and chord detection. Once I have finished the project, I will write a thesis recording what I have done.

- **Semester Goal**

The goal written above is the whole project goal, but apparently, I cannot finish so much work in one semester. Therefore, this semester, I will just try to finish chord detection. And for chord detection, I will just detect one chord at one time of a short audio.

- **Method**

Currently, I have found some papers online, but I have not decided to use which method. From my perspective, I will try methods in those essays and figure out which one is the most suitable.

All programming will be completed in C language. At the same time, I will use MATLAB for reference, due to its audio processing functions.

- **Steps**

Firstly, I will synthesize some chords to analyze its frequency and spectrum. This step is helpful for finding multiple fundamental frequencies.

Then I will use one of the methods in papers to detect the chord in a short audio. (The papers are listed in the reference)

Last, I will test the program with some known chords, to get the accuracy of chord detection.

- **Summary**

In a word, I will find a suitable method to detect chords, which means that finding every node in a chord. Besides, testing the accuracy of program is another goal in this semester.

- **Reference**

“Multiple Fundamental Frequency Estimation by Summing Harmonic Amplitudes” - Anssi Klapuri

Schuller, B., & Gollan, B. (2012). Music Theoretic and Perception-based Features for Audio Key Determination. *Journal Of New Music Research*, 41(2), 175-193.  
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