DSP Lab Final Project Proposal

Project topic: Guitar Simulator

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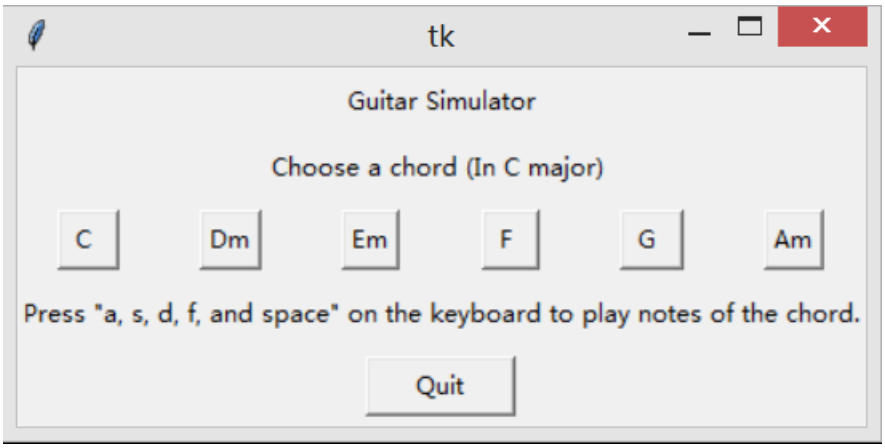
Our guitar simulator project is designed to play guitar chords, in real-time when users press the keyboard.

Here is the preliminary interface of our guitar simulator system.



Users can choose different chords through the GUI above. The choosing chord buttons are connected to a chord-changing function which can link 5 notes (frequencies) of the chosen chord to the keys on the keyboard(a, s, d, f, and space, from low-frequency note to high-frequency note). This function requires the text on the buttons as an input parameter.

After choosing a chord, users could press a, s, d, f, and space on the keyboard to play the notes of the chord. To simulate the tone of the guitar, the system will play the note by applying the Karplus-Strong algorithm to the original sound in real-time related to which key was pressed. There is a difference equation (filter) to implement each note as the original sound for the Karplus-Strong algorithm.