PHY426 Term Project Proposal

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Our input data will be a recorded clip of a chord sequence played on guitar/piano by one of the group members. Fourier analysis will be used to determine the chords that are played (and when chord changes occur), and the corresponding notes included in each of them. Our program will then create an improvised melody to be played in between the chords, using an idea borrowed from the Metropolis algorithm. This will work by picking a note at random, if the note exists in the current chord it will be played, otherwise it will be played depending on a probability according to the circle of fifths (ie. How dissonant it is).

Hypothesis: If we introduce a “temperature” like in the Metropolis algorithm, the melodies produced at higher temperatures will be less appealing to the ear than those produced at low temperatures.

***For example:*** If a C chord is played and either of the notes {C, E, G} are randomly picked, they will be played. If an F# is picked at random, it will have the lowest probability of being played as it is furthest away from the C on the circle of fifths.