

Musical Feet:

A Step-by-Step Approach to Music Generation

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Abstract

The goal of our project is to generate random music in real time as a response to the user's walking pace. The music will follow Western classical chord progressions, and the tempo, tonality, and volume will change based on the frequency characteristics of the user's pace. An electromechanical pedometer will be used to sense footsteps, and it will send an analog signal to the AC97 for analog-to-digital conversion. Digital FFT modules will then extract the relevant frequency data from the waveform. The tempo of the music will be set by the frequency of the footsteps, and the tonality and volume will respond to changes in the frequency. Sequential logic will generate a chord progression in real time using these inputs and translate the progression into a set of notes. Synthesized string instrument samples will be stored and accessed based on the generated pitches, and the output will sound like music played by a string quartet.