ME 492 PROJECT ANNOUNCEMENT

Title: SOUND SYNTHESIS FOR STRINGED MUSICAL INSTRUMENTS USING INEXPENSIVE SENSORS

Position Ref: MUSIC

Work Description:

Besides strings, the soundboard is the most important part of stringed musical instruments. It is the soundboard that disperses and shapes the sound, which, in turn, creates distinct personalities.

The vibrations of the strings are transferred to the soundboard mainly through a support called bridge. The vibrations of the soundboard are much more complex than those of strings. Based on the thickness and overall shape, vibrations in the soundboard travels and are dispersed and dissipated differently in different directions. Some frequencies are enhanced, some are not. Then, vibrations induced in the air creates the acoustical effect at a distant, which we hear as the sound of the instrument.

It is desirable to maximize the intensities in a certain frequency range, without changing the overall personality of the sound. In order to do this, one would have to use point vibration data from multiple locations.

Some or all of the following may be involved:

- Analytical and numerical optimization methods
- Experimental setup to measure actual sound intensities
- Numerical data processing based on experimental results
- Use of specialized music and sound software