MobileSoundDiscoveryApp: Mobile Audio Medical Devices and Quantitative-Qualitative Audio Analysis Applications and Designs Using an Autonomous Audio Knowledge Engine

Chung, Ryan

The goal of this project is to demonstrate that multiple frequency Bluetooth enhanced mobile devices with string-shape based structural-spectra pattern recognition software can provide a cost effective health screening, diagnostics, and real time health monitoring for people who cannot afford a doctor’s visit. Many different designs of Bluetooth microphone audio collectors were tested and the best design has been implemented for an Android phone. An audio knowledge engine based on string-shape analysis is used. The engine is able to identify audio types by repeated patterns and is able to identify bird songs with greater than 80% for over 300 species of birds, insects, nature sound and the human heart and lung sounds. It is also able to identify patterns of heart beat and quantitative information such as heart rate, and anomalies associated with malfunctioning hearts and lungs. An audio collecting Bluetooth device was constructed for less than two dollars.