



Mechanical/Biomedical Sustainability Project

Characterization of Bowel Sounds in Neonates

Mission Statement

Characterize the bowel sounds in premature infants (neonates) using signal processing in an effort to aid in FDA approval for a prototype stethoscope.

Synopsis

Starvation is a major cause of death for premature infants. It is difficult to determine how much food an infant has taken in. It is even more difficult to determine if the infant is hungry in the first place. One way to determine hunger and the amount of food consumed is to monitor the infant's bowel sounds.

The team attempted to characterize bowl sounds in both infants and adults using signal processing equipment and LabVIEW computer software. It was felt that taking real life sounds and attempting to characterize the sounds would assist in FDA approval for Dr. Eric Campana's stethoscope invention studied during the 2009 LSSL program.

The team was able to discover three specific sounds, a "click" a "lub dub" and a "call of doom". All three sounds are different and imply different actions on the stomach's part. A Discrete Fourier Transform (DFT) was made on all three sounds in order to characterize the signals. As a result the team was able to prove that they could electronically recognize sound and the same sound could be isolated among different people and different times.

A continuation of this work is anticipated for the 2010-2011 academic year



Mohamed Osman
Julie Mangino
Eugene Sung

Winter Intersession only
University of Harford
University of Connecticut