The ThereNIM: A Touch-less Respiratory Monitor

Anandapadmanaban, Eswar

The ThereNIM (There-Non Invasive Monitor) is a novel touch-less respiratory monitor. It is noninvasive without any contact with the patient. In addition, it is inexpensive and implementable virtually anywhere. Current methods are painful, uncomfortable, and expensive. I was motivated by witnessing the discomfort of sleep research patients and was inspired by the Theremin musical instrument. Using the same basic principles, I used simple electrical components to design the ThereNIM, a heterodyning oscillator device that detects changes in a patient's chest movement. It uses the change in capacitance as an individual's chest approaches the electric field of the ThereNIM's antenna-plates to change the frequencies of the oscillators in the device. This change is plotted using visualizer software to present to doctors, nurses, and patients. The ThereNIM has no side effects and can be used in any setting. This device is especially useful for sleep research, burn victims, infants, and general hospital ward patients. Further research can enhance its sensitivity and accuracy. This device will facilitate respiratory monitoring for hospitals and doctors. At under $50, the ThereNIM can be acquired inexpensively, and can save many lives.

Awards Won: