Registration Form

TEAM INFORMATION

Team Name/Project Title: Non-Contact Respiratory Analysis using Thermal Camera

Department: Computer Science and Engineering

Faculty Advisor: Dr. Min-Hyung Choi

Team Members: Bhuwan Sapkota, Samrid KC

PROJECT INFORMATION

Description:

In this project, we present a non-contact respiratory analysis method, that utilizes a thermal camera to detect respiratory behaviors of a patient.

Abstract:

Medical professionals prefer respiratory analysis that is both accurate, and comfortable for their patients. Most contact methods which perform respiratory analysis require sensors to be placed on a patient’s body. These methods provide accurate results, but they are also uncomfortable for the patient and impacts their natural breathing behaviors. On the other hand, existing non-contact respiratory analysis methods which monitor respiration remotely and comfortably calculate results with lower accuracy.

The goal of this project is to conduct non-contact respiratory analysis using computer vision and image analysis technologies. A thermal infrared camera embedded with special filters for CO2 is used to collect carbon dioxide density videos of a patient while they exhale. Through mathematical analysis of the frames of these videos, and Neural Networks we estimate respiratory behaviors such as breathing rate, breathing capacity, and exhale strength.