
TOUCHLESS THERMAL RESPIRATORY MONITOR

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An abnormal respiratory rate and changes in respiratory rate can give an early indication of physiological disorders such as a stroke or heart failure. Also, many drugs prescribed for pain or sedation carry the risk for respiratory depression. Medical devices used to track breathing today often require the use of wires and sensors that can create obvious restrictions in the patient's motion, ability to maneuver, or even sleep. The long-term objective of this research project is to build a system that can monitor breathing without coming into contact with a patient. The goal of the current project is to optimize the functionality of the sensor and prove functionality by testing on human subjects. The Touchless Thermal Respiratory Monitor was built using a thermal sensor, 3-D printed parts, and a laser. The thermal sensor was programmed to read temperature, and in this project, the location yielding the greatest temperature differential between the air that has been exhaled by the patient and the room temperature will be found. The laser will allow for proper alignment of the thermal sensor to this location. The temperature difference will be monitored and plotted in MATLAB in order to track the respiratory rate. Irregular signals or a lack of signal would indicate that the patient is having breathing problems, or that the patient has moved out of the sensors path.