

DEPARTMENT OF BIOMEDICAL ENGINEERING
COLLEGE OF ENGINEERING AND APPLIED SCIENCES

SUMMER RESEARCH OPPORTUNITIES FOR UNDERGRADUATE students

FOR APPLICATION YEAR: 2024

PROJECT TITLE: Fetal Heart Rate Monitoring

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Project Description

Fetal heart rate monitoring (FHR) is a valuable tool for tracking the health of the fetus during pregnancy; however, there are a plethora of challenges that limit access to prenatal care for the highest-risk patients, often from marginalized backgrounds. The recurring prenatal visits undertaken to acquire and analyze basic fetal measurements may strain the patient, physically, emotionally, and economically. The traditional care tools for external fetal heart rate monitoring with cardiotocography can only be used by a medical professional in a healthcare setting. Furthermore, the highest-risk patients are often bedbound for prolonged periods, leading to maternal physical and mental deconditioning. The gel and padding required for this monitoring can also lead to skin breakdown, causing further distress. Hypothesis: An untethered, comfortable, FHR monitor would improve prenatal care by offering patients and hospital staff an alternative non-invasive, continuous monitoring system that is comparable in accuracy to the traditional strategies while also offering a far greater patient experience. Our team has extensive experience developing wearable, continuous, physiological monitoring devices (US10786201B2). We are therefore adapting our previous technologies to our proposed project.