Thesis Portfolio

Utilizing Passive Data Collection to Detect Anxiety and Depression

(Technical Report)

The State of Remote Patient Monitoring and its Implications on the Medical Industry

(STS Research Paper)

An Undergraduate Thesis

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Sociotechnical Synthesis

With the rise of remote patient monitoring and telemedicine in a post-COVID world, the medical industry is changing rapidly and becoming depersonalized. However, such changes are not necessarily beneficial for the patient nor the doctor. Previous studies have evaluated the benefits and consequences of these changes in the industry for the patients, but such has not been done for those within the medical industry itself. As a result, doctors were interviewed to describe the impact of these changes in medicine. Wearable companies were questioned about user privacy and their role in the larger system of remote patient monitoring. Through surveys, the results of previous studies were also confirmed or questioned with insight into patients' opinions on remote patient monitoring current usage, patient willingness, personal comfort, privacy concerns, and the outlook of each form of medicine. Each stakeholder was analyzed for their roles and desires in RPM as well as how the medical industry may change with this new technology.

Many surveyees were interested in the potential health benefits of remote patient monitoring while doctors were wary in their ability to gauge a patient's mental health. However, through a technical study to model daily behavior and predict mental health outcomes such as depression and anxiety, the effectiveness of remote patient monitoring and the ability to determine mental health through alternative means can be assessed. Using k-means clustering to find similar behaviors and a convolutional neural network, depression and anxiety of students were predicted with an accuracy of 95%.