Thesis Project Portfolio

Design of a Performance Tracking Interface to Address Physician Burnout

(Technical Report)

Exploring the Receptibility and Transition to the Use of Wearables to Self-Manage Burnout for Physicians

(STS Research Paper)

An Undergraduate Thesis

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In Fulfillment of the Requirements for the Degree

Bachelor of Science, School of Engineering

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Department of Biomedical Engineering

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Sociotechnical Synthesis

Over the past 50 years, physician burnout has worsened and led to several negative consequences, such as fatigue, increased healthcare costs, and medical errors. The increase of technological innovations has enabled those in the healthcare field with new ways to tackle this issue. One of the most prominent innovations in the last decade has been wearable biometric sensors, which have given greater insight into individual physiology.

As part of my technical project, I worked with the startup Arena Labs to design a dashboard for physicians to better understand their physiological data and stressors throughout their days. The dashboard reports back and analyzes data from a WHOOP strap, which measures several biometric variables. Our design goal is to create a platform that helps physicians better understand what physiological data contributes the most to their stressors, provides wellness trainings and helps diagnose burnout.

My STS Thesis builds off of my project and examines how wearable technology has emerged as a tool to mitigate physician burnout. I used Multi Level Perspective Theory to explore how the healthcare field is transitioning due to the rise of this technology. While wearables have shown promising results, there lie several obstacles in adoption due to data privacy fears, physician sentiment on burnout initiatives and efficacy of the technology.

This past year, I was able to make significant progress and launch a live platform with Arena Labs to two physician cohorts. While the launch was

closer to the end of the year, we saw significant correlations between physiological factors and reported stress from physicians. The next step would be to assess how this information can contribute to mitigation strategies for burnout. One challenge in both the STS thesis and technical report was in regards to data privacy that halted progress in some respects. In every platform, we should all consider who truly owns the data when a customer is paying for a service. It is our duty as engineers and designers to be transparent about the data that is collected and make sure a diversity of stakeholders have a say in the design process. I came to see the importance of this while researching the wearable space and also designing a platform that is heavily dependent on personalized user data.

I would like to thank Professor Ferguson for helping me think through my STS Thesis and pushing my thought process. Additionally, I would like to thank Brian Ferguson (CEO at Arena Labs) and Glen Trachtenberg (Head of Product at Arena Labs), who both brought me on the team at Arena Labs and gave me the opportunity to contribute to their mission.