Stress Shield

Project Description and Clarification

Precision Edge Performance

The Shield-Bearers

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Introduction

I. Introduction

Today, around 30% of all first responders develop behavioral health conditions including PTSD, depression and severe anxiety [1]. This is not surprising, considering the intense challenges first responders face daily. Effectively managing stress is a critical but often underappreciated skill that every first responder must master. Their ability to perform at their best in emergencies depends on maintaining a clear state of mind, even in the most chaotic situations.

Despite the potential, technology's role in supporting the mental health of first responders has been largely overlooked. That's where Stress Shield comes in. Our solution aims to provide first responders with the care they need to manage stress using personalized AI technology. By tailoring support to each user, we can ensure they receive the focused care necessary to keep them performing at their best. By leveraging this technology, we can assist first responders in managing their stress and navigating the daily challenges of their jobs more effectively.

II. Background and Related Work

To evaluate where our app will be in our domain, we first need to outline who our key competitors are and why our app will stand out from them. We will narrow the definition of our competitors down to: "Apps that track health data using an Apple Watch and/or provide preventative steps to help users manage stress". Using this definition, we have narrowed down our top two competitors that offer a range of services that we also intend to offer. Highlighting these competitors will help to understand where our app sits in this domain.

The first major competitor that was identified was Apple's Stress Monitor for Apple Watch [2]. Apple's Stress Monitor is a subscription based service that tracks users' stress levels based off of collected heart data while wearing the Apple Smart Watch. This allows users to view their stress levels over time and understand how daily or weekly trends affect their own stress. The app also will provide basic recommendations for how the user could cope with their stress based on their given health data. It doesn't only track heart rate though, it also tracks users' sleep level and physical activity level. This can also make the user more mindful of whether they are getting enough sleep or physical activity week by week. The app's main feature is saving the users' data so that the user can be more conscious about their health data and take proactive steps in improving their own well-being. However, the app falls short compared to Stress Shield because it is not targeted at a specific demographic and provides only basic recommendations for stress management. Stress Shield, on the other hand, will offer more personalized coaching tailored to the unique needs of first responders.

The second major competitor is the Calm App [3]. This is a mobile application that is offered on all mobile operating systems and can be purchased using either a monthly subscription or a lifetime subscription of $400. The calm app does not pair with wearable devices to track health data, instead offers a variety of features that users can enjoy to improve their well-being. Some of the features of the app include guided meditations, sleep stories, breathing technique lessons, and movement sessions designed for mindfulness. While this app does not pair with a wearable device like our app intends, it does offer a lot of services that we intend to implement to help first responders with their stress. This app goes the extra mile in giving real tools for stress management for users to use. We intend on creating a hybrid combination of the Calm App and the Apple's Stress monitor to create a more personalized stress coach that our users can enjoy.

In summary, while there are other applications that exist that provide similar services that we do, they don't include all of the features Stress Shield intends to have. Our app will be more of a one-stop shop for all users' well-being needs that both tracks users data and gives real tools they can use in order to manage that stress. On top of this, we also are targeting the first responder demographic which has a higher rate of depression and anxiety than that of non-first responders. We stand out in the current market since we will be offering more features than other apps do while also targeting a highly-stressed demographic.

In order to complete these tasks, we will need to learn two important skills. First and foremost we will need to understand how to access and use health data from an apple watch on to a mobile application. This is a technology we are all unfamiliar with, and an essential one to be able to finish the project. Second, we will need to learn how to create mobile applications using languages like Swift. We intend on taking an online Swift development course in order to learn this skill. Once we master these two skills, we will be prepared and ready to complete this project.

III. Project Overview

Project Problem
Frontline workers and first responders, such as nurses, doctors, police officers, firefighters, etc. are the backbone of society, tirelessly serving communities under constant pressure. However, these professionals are facing escalating levels of stress due to increasing demands coupled with diminishing resources. The continuous strain of having to do more with less time, funding, and support is leading to widespread burnout, harming their physical and mental health as well as the well-being of the communities they serve. The health, wellness, and safety gaps created by this growing burnout are alarming and pose a critical challenge.

Chronic stress affects the ability of these individuals to perform at their best, often resulting in emotional exhaustion, decreased motivation, and impaired decision making. Over time, it negatively impacts both their personal lives and their careers. Many of these workers are

choosing to leave their professions entirely, creating further stress for those who remain. In the long term, this cycle harms the entire system.

Current stress management solutions, while helpful, often offer only temporary relief. They fail to address the root of the problem: the need for proactive, long-term stress resilience. There is a crucial need for a solution that not only helps individuals manage stress in the moment but also gives them the ability to build resilience over time. The StressShield app will be designed to fill this gap.

<u>Project Objectives</u>
StressShield will be an iPhone and Apple Watch app designed to be the behind-the-scenes partner that first responders and frontline workers can rely on in their battle against chronic stress. This app aims to utilize wearable technology, biofeedback, and artificial intelligence to provide personalized resilience training. It is not just about helping users manage stress when they feel overwhelmed but enabling them to proactively build a "shield" that will protect them from the harmful effects of chronic stress.

One of our objectives for this project will be developing a real-time stress tracking system. We will need to sync with an Apple Watch to gather real-time data on stress indicators like heart rate and breathing patterns based on movement. Another objective will be to create an AI-driven coaching system. We will need to leverage algorithms to analyze individual stress data and deliver personalized coaching. The AI system will offer tailored guidance based on each user's unique stress patterns, helping them to develop effective resilience strategies. These strategies include mindfulness exercises, breathing techniques, or physical activity prompts. The next objective will be to design an engaging and user-friendly interface. The app's interface will be designed to captivate users, getting inspiration from successful apps like Duolingo and focusing on simplicity, motivation, and ease of use. Finally, the project will culminate in the delivery of a fully functional prototype that showcases the app's ability to support long-term stress resilience. We will test it ourselves to ensure its effectiveness in reducing burnout and improving mental and physical health.

IV.   Client and Stakeholder Identification and Preferences

Our primary client is Precision Edge Performance, and Dr. Kathryn Thompson, founder and CEO of Precision Edge Performance, will be our primary contact. The final project will be predominantly used by Precision Edge Performance to provide first responders and frontline workers with long-term and personalized guidance on developing and maintaining stress resilience. There are multiple stakeholders, which include but are not limited to Precision Edge Performance.

To provide first responders with long-term stress resilience training, we're working with Precision Edge to create a mobile app that uses wearable technology's biometric monitoring tools to monitor a person's stress and adapt their training accordingly. This project will require a released build of the application and the deployment of the game to the IOS-based Apple App Store.

Potential clients would include first-response agencies and companies or institutions that employ frontline workers. These clients could range from law enforcement agencies to healthcare providers to school districts—or any organization that seeks to limit the stress of its employees from stressful work environments. To appeal to these clients, the final build of our project needs to be accessible to a wide range of smartphones and wearable devices.

Lastly, all stakeholders of the project would benefit from code that is well-documented and clean, allowing for the extension of the software in the future. The StressShield team will ensure that these needs are of utmost priority when developing the application while addressing the preferences above. The requirements of our primary client will be addressed first, but the needs of other organizations will actively be considered throughout the entire development and design of the StressShield application.

V.   References

[1]R. M. Health, "First Responders and Mental Health: How We Can Support our Firefighters, Police Officers, and Emergency Medical Personnel," *Relief Mental Health*, Feb. 07, 2024. https://reliefmh.com/blog/first-responders-mental-health/#:~:text=%E2%80%9CIt%20is%20estimated%20that%2030

[2]"Stress Monitor for Watch," *App Store*. https://apps.apple.com/us/app/stress-monitor-for-watch/id1510429086

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