Group: Open Group

Sub-theme: I&T for Nature (Yama)

Project Code: O-001383

Innovative Hiking Safety Management Device for Outdoor Enthusiasts (内容只提供英文版)

User Pain Points

Our target audience encompasses all hikers. We found a concerning number of hiking accidents every year in Hong Kong, especially during hiking seasons. In 2023 alone, there were 20 recorded cases of accidents, with heat stroke and falls being the primary causes. These accidents could lead to severe injuries or even fatalities, with solo hikers being at the greatest risk due to late discovery and the absence of immediate assistance. Therefore, we want to develop an in-ear health monitoring device that can detect heat stroke, falls, accompanied by GPS tracking to provide timely alerts and calls for prompt assistance.

Solution Benefits

The integration of fall detection with GPS tracking optimizes search efficiency and provides prompt assistance to the injured. While both coventional smartwatches and our device feature fall detection and temperature monitoring, our solution stands out with its audio functionality. With voice prompts, the user will be more aware of the alert as visual alerts can be easily missed. Also, we measure core body temperature, which is a more accurate indicator for heat stroke symptoms when compared to skin

temperature measured by a smartwatch. Additionally, our device's in-ear placement reduces obstructions and minimizes data errors, resulting in higher accuracy levels.

Technologies Applied

Our technology utilizes Photoplethysmogram technology to detect human bio-signals, like conventional smartwatches. Our innovation lies in the placement of the measurement point. Instead of the traditional wrist placement, we strategically position it in the ear. This unique approach enhances the accuracy and reliability of the measurements, providing users with more precise and consistent biometric data. Moreover, we use medical infrared light, which is more accurate than the green light that is commonly used on smartwatches, particularly in scenarios of cold weather and dark skin. Most importantly, we can generate voice prompts instead of vibrations, which can be easily missed.

Target Users

User Profile / Persona:

Our specialized Hiking BUDdy earbuds will be catered towards Hong Kong outdoor enthusiasts, especially those who enjoy hiking. Currently, in collaboration with the Hong Kong Police Force, our Earbuds are designed to provide their teams with real-time biometric data, such as their temperature, to reduce the likelihood of heat exhaustion during their work shifts. However, to expand its application, we aim to improve and enhance the earbuds' functions to meet the needs of those who adopt an outdoor mobile lifestyle and are often at risk of heat stroke and exhaustion, such as hikers in Hong Kong.

User Scenario and Goals:

The Hiking BUDdy is tailored for outdoor environments, considering potential sun exposure, uneven terrain, and situations where users may experience heightened heart rates due to demanding work patterns. For instance, imagine a group of hikers planning a summer mountain trek. With the Hiking BUDdy, users will receive alerts for abnormal vitals, ensuring their safety in sun-drenched conditions. Furthermore, the earbuds assist by detecting potential falls on bumpy surfaces. If users suffer an injury that leads to unconsciousness, emergency services and users' emergency contacts are promptly notified of their GPS-tracked location and live vitals.