

Wearable Technology Applications in Healthcare

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Abstract

Wearable technology is still at a very early stage where the utility of using the device does not create a vast impact in people's lives. However, there is a great opportunity for wearable devices to impact the way people treat their health. There are many popular wearable devices from Apple and Fitbit but Amazon is working on a new device called Halo that can track people's moods, heart rate, voice tones and promises to use the data to monitor people's health and predict possible future diseases.

Introduction

The need for technology and digital devices accelerated during the COVID-19 pandemic and there has been a growing investment into the future of the healthcare system. Many people have been thinking about how technology can be used to prevent diseases and make healthcare more accessible to everyone. If patient generated data can be directly synced to electronic health records, then doctors can monitor activities such as step counts or heart rates without actually seeing the patient, and they can spot trends in a certain patient population. Which brings a huge potential to reduce healthcare costs and revolutionize how preventative medicine is currently applied.

Wearable technology can help by tracking all the data that doctors may find useful on their diagnosis or yearly checkup. Research has shown that 48% of patients would be willing to use a free fitness tracker if it was provided by their health insurance, while 60% are more likely to track things if it could reduce their insurance premiums. Since this would help to prevent

diseases it would make sense for insurance companies to invest into this type of technology and provide benefits for people who are willing to share their data with a doctor.

Technical

There are many brands who invest in fitness tracking devices like Apple Watches, Fitbits, Xiamis and more. But Amazon released a new product called Amazon Halo band that uses the data collected in their AI powered features to help users with actionable ways to improve their well being. The Halo band is not a smartwatch and does not have a screen so the person will not receive notifications or connect to their phone for any other purpose. It's strictly a health band and it brings many features that you can't find in competitors. It comes with: an accelerometer, a temperature sensor, a heart rate monitor, two microphones, is water-resistant and can last seven days without a charge.

The biggest new technology will be a feature called Tone to help customers understand how they sound to others. The watch will listen to the user when they speak and it will be trained to recognize their voice and record their day unless the user turns the microphone off. The band will use machine learning to analyze the positivity and energy of their voice—positivity is going to be measured by how happy or sad they sound, and energy is how excited or tired they sound. It will also use the cell phone camera to create 3D scans of body fat composition. After collecting the data the app is able to analyze if the user was anxious, hesitant or stressed throughout their day. And give input overtime of how their mood can impact their health. It may help someone who is depressed, or stressed to look for help if that is interrupting their daily activities.

Another feature is activity which is measured on points that are awarded based on the intensity and duration of an exercise. Sleep is measured via motion, heart rate and temperature in a scale out of one hundred. The watch can also identify if you need better sleep habits and if you have uninterrupted sleep. Labs is another feature that includes challenges, experiments and workouts from partners like 8fit, American Heart Association, Orangetheory and many more. Amazon was able to partner with many health organizations who are interested in how their product can be used.

The most substantial challenge Amazon faces with this type of technology is the privacy issues around the data that is being stored and analyzed. Some people may consider the app invasive because of the two microphones recording the audio. Amazon assured that they will be very careful with the recorded data, the audio and data will only be stored locally and deleted after it processes the information. The app will not exchange data with any other devices for security reasons. But there can be a lot of questioning of how the company may use this newly acquired data for their own capital gain.

Conclusion

We have more access to our own healthcare data than ever before with wearables and mobile health tracking apps delivering health related data right into our hands. Overall this type of technology weighs heavily on Machine Learning and Artificial Intelligence since the application needs to detect who the user is, learn about their temper based solely on their voice. Currently there isn't any device that tracks people's emotions and uses the data for medical reasons so this can bring a lot of innovation to the healthcare industry. Hopefully other

competitors will also develop features that can greatly impact people's lives and the way how we currently perceive our health.

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