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RELIABILITY OF WEARABLE SENSORS IN HEALTH CARE MONITORING

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Abstract

Objective of the experiment was to test the reliability of wearables in healthcare. Also, to check if technological advancement has helped in the accuracy of these sensors in modern day wearables. After testing results showed inaccuracy in the sensors. Proving that sensors in modern day wearables are not as reliable as advertised by the companies.

Keywords:- accuracy, commercial wearable devices, Noise, Dizo, boAt, Crossbeats, Pebble, Tagg, Gionee

Introduction

Recently there has been a rise in purchasing of wearable devices for health tracking especially for health tracking. Newer wearables have been known to make claims such as being extremely accurate and being able to detect diseases and health problems. The issue is when tested they were seen as not reliable in other papers, and I wanted to test that.

Experimental

For the experiment I basically took a couple of smartwatches by popular market leaders such as Noise, Dizo, boAt, Crossbeats, Pebble, Tagg, Gionee. I strapped the smart watches onto two fruits an orange and a guava. For the testing of the heart rate monitor. I then turned on the heart rate checking program to check if a pulse was detected.

Results

Since smartwatches and fitness bands measure heart rate by scanning blood flow near your wrist, by illuminating it with LEDs. The colour green is chosen, because it is absorbed well by our red blood, so optical sensors can gauge the flow of blood and heart beats more accurately. All the smart watches showed a pulse on both fruits as the light illuminated the water contents of the fruits and the optical sensors gauged that as blood flow. This goes ahead to show the inaccuracy and false claims made by companies as these popular and so called technologically advanced smartwatches couldn't differentiate between a fruit and a human. The same two fruits were used but it's also observed how all watches gave a different reading

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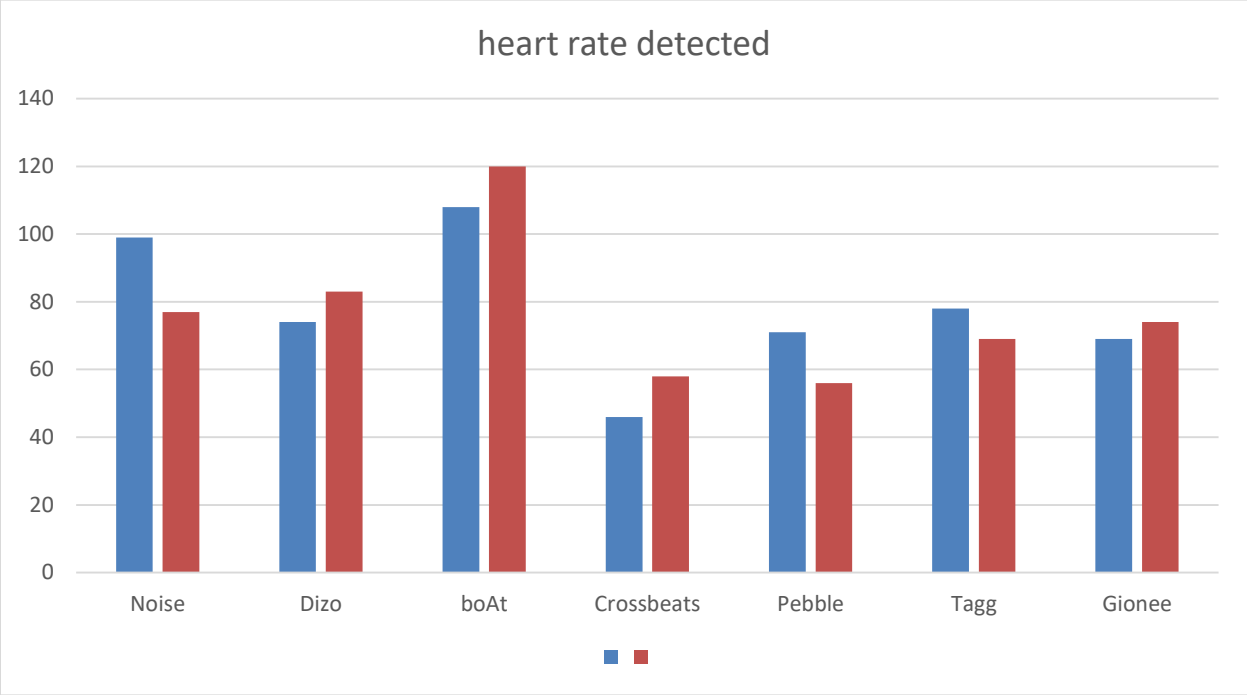
Discussion

Heart rate detected by each brand on the fruit in bpm		
	orange	guava
Noise	99	77
Dizo	74	83
boAt	108	120
Crossbeats	46	58
Pebble	71	56
Tagg	78	69
Gionee	69	74



Conclusion

Commercial wearable devices are accurate for measuring steps and heart rate in laboratory-based settings, but this varies by the manufacturer and device type. Devices are constantly being upgraded and redesigned to new models, suggesting the need for more current reviews and research.

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