HealthyPi - Open source IoT vital signs monitoring HAT

Business plan for Hackaday best product prize 2017

Basic vital sign monitors are seldom low-cost and reliable at the same time, which limits their use usually to most medical facilities in developed countries. Also, these have limited connectivity, portability and interoperability with other platforms, services and analytics software. Cheaper vital sign monitors which do not have certifications are unreliable and there is no way of checking the accuracy of these devices as little or no documentation is available about them.

Market

The HealthyPi is primarily targeted at medical and healthcare researchers, students and professionals for their research purposes in the same form or in a modified form factor. Due to the flexible nature of this project, in terms of both “hackability” and adaptability, we see this being used to design and develop anything from remote tele-medicine systems to low-cost, reliable patient monitoring systems for developing countries.

Competitive Advantage

- Open-source and non-proprietary – can be used in its original form or can be modified according to the requirements of the application at hand.
- Can be used as a HAT add-on for Raspberry Pi, as well through USB with any computing platform. Raspberry Pi was used for a cost advantage and the wide market access that it enjoys.
- Can work out-of-the-box for the Internet of Things (IoT) using the integrated WiFi interface on the Raspberry Pi 3
- On-board ATSAMD21 microcontroller with an Arduino bootlaoder allows for reprogramming the HAT to work as a standalone system that can do processing as well. Opens up possibilities for algorithm development.

Our Solution

We developed the HealthyPi v3 HAT for the Raspberry Pi as a way of opening up the healthcare and open source medical to anyone. The HealthyPi is made of the same "medical-grade" components found in regular vital sign monitors, for a fraction of the cost of such system. This is our way of democratizing medical hardware to develop new areas of research. Our objective when we began developing the HealthyPi was to make a simple vital sign monitoring system which is simple, affordable, open-source and accessible.

This can be used with a Raspberry Pi using a display; use it with a Raspberry Pi with the official touchscreen using our “Complete Kit,” or you can use it standalone by connecting it to any computer’s USB port. The software is compatible across all platforms.

Financials & Funding

We have just successfully completed a crowd-funding campaign on Crowd Supply for our initial round of funding, raising close to $20,000 with about 85 pre-orders. Previous versions of this product also have sold about 100 orders worldwide.

Funding requirements for the future:

- Depending on the end application, approvals and certifications (CE, FCC for consumer applications) and US FDA clearance for medical applications.
- Industrial design and usability design

All project documentation and progress is available on Hackaday :

https://hackaday.io/project/25380-connected-health-open-source-iot-patient-monitor