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***Proposal for the development of Breathalyzer***

Prepared by Karandeep Singh, Maheshwerie Samaroo, Mohita Prabhakar  
*Computer Engineering Technology Students*https://github.com/N01150244/pulsesensor

**Executive Summary**

As a student in the Computer Engineering Technology program, I will be integrating the knowledge and skills I have learned from our program into this Internet of Things themed capstone project. This proposal requests the approval to build the hardware portion that will connect to a database as well as to a mobile device application. The internet connected hardware will include a custom PCB with the following sensors and actuators . The database will store . The mobile device functionality will include and will be further detailed in the mobile application proposal. I will be collaborating with the following company/department . In the winter semester I plan to form a group with the following students, who are also building similar hardware this term and working on the mobile application with me . The hardware will be completed in CENG 317 Hardware Production Techniques independently and the application will be completed in CENG 319 Software Project. These will be integrated together in the subsequent term in CENG 355 Computer Systems Project as a member of a 2 or 3 student group.

**Background**

The problem solved by this project is . A bit of background about this topic is .

Existing products on the market include [1]. I have searched for prior art via Humber’s IEEE subscription selecting “My Subscribed Content” [2] and have found and read [3] which provides insight into similar efforts.

In the Computer Engineering Technology program we have learned about the following topics from the respective relevant courses:

* Java Docs from CENG 212 Programming Techniques In Java,
* Construction of circuits from CENG 215 Digital And Interfacing Systems,
* Rapid application development and Gantt charts from CENG 216 Intro to Software Engineering,
* Micro computing from CENG 252 Embedded Systems,
* SQL from CENG 254 Database With Java,
* Web access of databases from CENG 256 Internet Scripting; and,
* Wireless protocols such as 802.11 from TECH152 Telecom Networks.

This knowledge and skill set will enable me to build the subsystems and integrate them together as my capstone project.

**Methodology**

This proposal is assigned in the first week of class and is due at the beginning of class in the second week of the fall semester. My coursework will focus on the first two of the 3 phases of this project:  
 Phase 1 Hardware build.  
 Phase 2 System integration.  
 Phase 3 Demonstration to future employers.

*Phase 1 Hardware build*

The hardware build will be completed in the fall term. It will fit within the CENG Project maximum dimensions of 12 13/16" x 6" x 2 7/8" (32.5cm x 15.25cm x 7.25cm) which represents the space below the tray in the parts kit. The highest AC voltage that will be used is 16Vrms from a wall adaptor from which +/- 15V or as high as 45 VDC can be obtained. Maximum power consumption will be 20 Watts.

*Phase 2 System integration*

The system integration will be completed in the fall term.

*Phase 3 Demonstration to future employers*

This project will showcase the knowledge and skills that I have learned to potential employers.

The brief description below provides rough effort and non-labor estimates respectively for each phase. A Gantt chart will be added by week 3 to provide more project schedule details and a more complete budget will be added by week 4. It is important to start tasks as soon as possible to be able to meet deadlines.

Raspberry Pi 3 starter kit

XD-58C Sensor from Sparkykit heart rate sensor,MQ3 Alcohol Gas Sensor

Jumper Wires(Male-Female, Female-Female, Male-Male Jumper Wire Cables)

Heart Rate Educational Starter Kit

**Concluding remarks**

This proposal presents a plan for providing an IoT solution for This is an opportunity to integrate the knowledge and skills developed in our program to create a collaborative project which will lower the rate of alcohol consumption and bring us closer to a solution to prevent drinking and driving.

I request approval of this project.. This is an opportunity to integrate the knowledge and skills developed in our program to create a collaborative IoT capstone project demonstrating my ability to learn how to support projects such as the initiative described by [3]. I request approval of this project.

**References**

[1] Heartbeats in Your Project, Lickety-Split ♥. (n.d.). Retrieved February 02, 2018, from https://pulsesensor.com/

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[2] Institute of Electrical and Electronics Engineers. (2015, August 28). IEEE Xplore Digital Library [Online]. Available: https://ieeexplore.ieee.org/search/advsearch.jsp

[3] Wang, X., Jin, J., & Li, S. (2008, September 03). Measurement and analysis of heart signal based on the pressure sensor. Retrieved February 04, 2018, from http://ieeexplore.ieee.org/document/4618175/

Malathi, M., Sujitha, R., & Revathy, M. R. (2018, February 01). Alcohol detection and seat belt control system using Arduino. Retrieved February 04, 2018, from http://ieeexplore.ieee.org/document/8275841/

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