**Technology Report**

**For**

**DigitalDashboard**

**Version 1.0 in progress**

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# Declaration of Group Authorship

We, Karan Raj Kanwar, Zhill Patel and Darren Prong confirm that this work submitted for assessment is our own and is expressed in our own words. And uses made within it of the works of any author, in any form (ideas, equations, figures, texts, tables, programs), are properly acknowledged at the point of use. A list of references used is included. Please refer to chapter 2 Overview for the work breakdown.

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# Abstract

In today’s society people enjoy knowing statistics for their travelling periods, but having a bike or a scooter can’t provide real-time information or entertainment. A store-bought scooter or bike doesn't come with a tracker or entertainment but with the DigitalDashboard you can track your speed and listen to music at the same time. Just by simply mounting the portable device on the handle or the body of the source of transportation you can start receiving the real-time travelling speed, location, and music for entertainment purposes. We will demonstrate how our device gets mounted on a bike and scooter, how to use the DigitalDashboard device and its mobile application counterpart.

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# Revision History

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| **Name** | **Date** | **Reason For Changes** | **Version** |
| Karan, Zhill & Darren | 2019-02-10 | Added declaration of authorship, abstract and introduction | 0.1 |
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# 1.Introduction

The industry related to our device is the health, fitness and personal transport. The reason why it is considered for health and fitness is because of the adaptability of the device and its small portable form factor. As a personal transportation device it can be easily mounted/installed onto a cylindrical surface. This report includes the creation of the DigitalDashboard, device creation procedure, software used and gathering/analyzing results.

The solution we came up with is a portable mounting digital dashboard, this is fairly small to carry and mounts onto almost all circular surfaces some being the handle of a bike or scooter. This device can tell you your speed, location, altitude, longitude and can play music/radio all while being mounted on a surface.

The main problem is that children’s bikes and scooters don’t come with a digital screen for tracking or any source of entertainment. This we solve by allowing users to mount the DigitalDashboard onto their scooter or bike for tracking and or playing music, this can be use on consumer or professional basis.

# 2. Overview

### 2.0.1 Database and work breakdown

For our database we will be using the Firebase Real-time database. After some research it seems the Raspberry Pi and the mobile phone can both utilize Firebase and can be connected to move data around. Karan will be handling setting up the required entities from both mobile and the Raspberry Pi device to the database. Zhill will be making sure that the communication of data between the Raspberry Pi and the mobile application is working and that the data is stored in the database. Darren will be creating and modifying the FM radio (online/offline) functionality and hardware connectivity (TEA5767+amplifier connecting to our database and respond to CRUD operations accordingly). As well, a built in MP3 player; all to be used in conjunction with the LCD application.

### 2.0.2 Application and work breakdown

For our mobile application we will be working with Android Studio version 3.3. There will be 3 major components of creating the app. First one being creating a clean layout for the UI and having an aesthetically pleasing icon. The second component being the logic working correctly and having a mobile device communicating with the Raspberry Pi. Lastly getting the mobile device to push and pull data from or to the database. Karan will be handling database creation and the implementation in the application source code. Zhill will be handling some of the functionality of the application, for example, making sure the application will show the data that it got from the sensors. Darren will be handling loading online radio streams when available, and receiving, displaying and saving all local radio stations on the FM band; as well, loading potential MP3’s for the users’ device directly to the application. Our main system feature would be grabbing the speed from the accelerometer and displaying it on the screen, and having the functionality to play music all in device. For the application to run at its best performance an Android device running on 7.0.0 is required.

### 2.0.3 Hardware and work breakdown

For setting up our hardware we are going to need a practical sized enclosure for our devices which still holds its purpose of being a portable screen, also we need to attach everything together to get it all to function correctly. We are also required to create the GUI and program on the Raspberry Pi to get our application to work. Karan will be working on the enclosure and the program. Zhill will be working on the hardware portion of the sensors, making sure that it will be able fit inside the enclosure properly. Darren will testing the prototype at each stage of development and also assisting Zhill in fabricating a new PCB with all three sensors and necessary accessories (antenna, AUX port, speakers, etc.) integrated together into a single component. For the application to run at peak performance the latest raspberry pi 3b is required.

# 3. Results

# 4. Data

# 5. Analysis

# 6. Conclusion

# 7. Bibliography

# 8. Appendix A: Glossary

# 9. Appendix B: Analysis Models

# 10. Appendix C: Calculations