FYP Project Proposal Form 2018/2019.

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Project Title
A digital menu application for accessibility in restaurants

Summary (approx 200 words)
This project is a system that will assist users to order food without any interaction with a waiter/waitress. The goal of this application is the accessibility function for speech impaired, or users with social anxiety disorder to order food in a restaurant without the need to talk to a worker.

This system with allow users to make an order using a virtual menu scanned by a QR code. Then from the menu the user can add to cart the food that they want to order. The virtual menu will contain everything a real-life menu has including food allergy section and seasonal offers section.

The main target market of my application will be for consumers with difficulties ordering food at a restaurant. The system will be built using android studios, it will also contain functions for example; speech-to-text, colour-blindness friendly.

The end result of this system is to make ordering food at a crowded restaurant as accessible and efficient as possible. This application does not give the waiter/waitress an easy job as the order must be delivered to the table, also necessary jobs must be done by the workers.

Background (and References)
I have been thinking about this application system for a long time now. I think that food and technology are both so important, I wanted to incorporate both of these essentials together to create an application that can be used on a daily basis.

I chose to use QR code as part of the application because it appeals curiosity. You don't know what you will see until the code is scanned. I think that this is an advantage to gain consumers.

I hope that this application can help consumers with getting rid of their fears and anxiety when in a crowded public space.

References:

https://www.businessproductivity.com/what-are-qr-codes-and-what-are-the-benefits/

http://www.speechdisorder.co.uk/technology-aid-therapy-speech-disorders.html

http://www.smallbiztechnology.com/archive/2017/04/how-technology-is-changing-the-restaurant-industry.html/#.W74biRNKilk

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Proposed Approach
The approach I would take for my project is to firstly research and design, secondly implementation and then finally testing. These sections must be in great detail as to create a user-friendly interface with a neat and clear GUI.

Research & Design:
During the first section I will need to research about QR code generation. The use of QR codes in now to have a knowledge of the popularity. I will focus the research mainly on QR code, Node.js and general android studios packages. I already have experience in application making using an android system. I would need to expand my knowledge on colour-blind, speech impairment and interaction skills with the user. I will also search for similar projects to compare results. This will help me to avoid any obstructions along the way.

The design will be simple with graphical user interface. Visually is important as the design should capture the targets attention but not over the top. A basic navigation bar should be used to help consumers to navigate around the app. My application will have a minimalistic colour scheme which will help vision impairment users.

Implementation:
The implementation process will consist of storing data on SQLite which is a built-in database API in android studios. The QR code will contain an ID which will then store data of the menu. This is done by getting access to google play services. It will also need 2 sub packages barcode package and a camera package.

- The barcode package will capture the code activity and once its captured it will be bind and tracked
- The camera package will open the camera

Implementation will also include key features of this application which is speech to text and colour blindness helper.

Testing:
Testing is very important as it gives me feedback of the application. Alpha and Beta testing should be done gradually. Alpha testing is done to check on User Interface, integration and systems usability. Beta testing is done after alpha testing is successful here it will be tested with a limited number of end users. In this case, family and friends.

Deliverables
Primary Features:
A working android application with accessibility functions. A connection between the client and database server. The user can view one menu upon QR scan, a menu can be accessed by many users at the same time. A simplistic navigation guide for consumers. User authentication to verify if the user is real when making orders.

Secondary Features:
A collection of test results giving feedback of the application, based on results changes may occur to make the application more user friendly.

Technical Requirements
Devices needed:
Android phones with version no later than lollipop
A printer
A laptop

Front-end requirements:
Using android xml files the layout and animation are used to create a graphical user interface. Along with the XML file the corresponding java file should provide its function. A printed QR code will be used to view restaurant menu upon scanning.

Back-end requirements:
Using androids built in SQLite database I can connect to the data. Adding Google play services and google client library I will be able to access function like speech-to-text. Also authenticate users using google account credentials. Using node.js can make the application more efficient. NEST API can connect to enable internet connection.

Project Reviews – Please include reviews of two of LAST 2 years projects from either DT228, DT282 or DT211C.

Project 1
Title:
Proactive Order Management System

Student:
Stephen Fox

Description (brief):
This project is based on consumers purchasing goods from a retail/ business and collect them after the purchase. The collection is verified using QR code.

What is complex in this project
The complexity of this project is the scheduling algorithm and the use of NuPIC.

What technical architecture was used
Model View Controller (MVC) system architecture
NuPIC
APPLE IOS
MongoDB
Node.js
REST API

Explain key strengths and weaknesses of this project, as you see it.
A strength in this project is time accuracy as the application calculates the distance from the user to the collection point and sets collection time based on the time spent on route using Google Map Distance Matrix.

A weakness would be if a worker misses an order or some kind of disturbance during the scheduling algorithm it doesn't determine what will happen. Which in return will cause users to wait in queue upon collection.

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Project 2
Title:
Travel Assistance

Student:
Cillian McCabe

Description (brief):
A real-time navigation system with android application that assist users on a route between two locations. It determines the consumers daily schedule by using Google Fit Data collected by an android device and then clusters the time and activities using a machine learning algorithm.

What is complex in this project:
The use of real-time navigation and implementation of machine learning. Clustering data which generates the scheduling data was complex.

What technical architecture was used
Android studios
Google Fit API, Google Map API, Weka, Realm Database
Model View Controller (MVC)
Model – Communication with the Realm Database
View – Communicates with controller class to display
Controller – Creation of notifications and clustering process

Explain key strengths and weaknesses of this project, as you see it.
A strength of this project is the process of clustering data and using machine learning determines the user's routine.

A weakness I think would be the security and safety of the app. It should wipe data after a certain amount of time because if a user takes the same route everyday should cause uncertainty and unsafe.

Proposal Sign off:
This is a practical project idea with clear real-world application. An essential element of the success of this project is the implementation of some unique element beyond the functionality of existing applications. To this end, I would suggest that the student provide an integrated accessibility system for restaurants, covering a variety of potential issues, not just communication if possible. Given the focus on accessibility the student may need to focus on clear documentation and tutorial elements.

Student Signature	**Date**
	11/10/2018
Lecturer Signature	**Date**
	11/10/2018