**Name of Project**: Wearable translation device using Intel Edison

**Project Proposal**

**1. ABTRACT**

The basic of this project is to create eyeglasses that help user to understand text from other language instantly. The materials we used to create this piece include: camera module, Intel Edison, and speaker. The techniques we created in order to manipulate the piece include: image processing, object character recognition, cloud computing services and text to speech system. Our overall approach was to create a wearable computer device that easy to use for translate language. Upon completion of the assignment, the product aesthetically pleasing because of the way it implement is easy to use and can help the confuse tourist.

**2. PROJECT INTRODUCTION**

As we all know, Malaysia is a multiracial society and tourist site. As we can see in the sign board, name place and even the text in shopping complex, there were lot of different language implement in each place. Sometime the tourist and even Malaysian might wander and confuse the simple text guide if they did not understand the language. By using the character recognition technology, it enables instant language translation for users travelling abroad to reading restaurant menus and other documents.

Although nowadays there were application in smartphones that can translate language so what is the different? We want to make the wearable gadget that easy to use and don’t need too much handling. So we don’t need to everytime open our smartphones to understand foreign language just for a simple text. The spectacle language translation is some other approach to overcome language barrier.

We would like to use Intel Edison board because of its small size and also have wifi and bluetooth connection. Furthermore, it can program using openCV, python and C++. The overall flow is illustrated in Fig. 1.

Fig. 1: Overall flow of project

The objective of this project is to understand foreign language instantly by using wearable gadget that doesn’t need too much handling.

**3. DESIGN METHODOLOGY**

3.1. Image processing

The image process is essential for our project. The small camera module will be use and mounted in the spectacle. The capture image will process by using openCV. The openCV will use on yocto project that can create custom Linux-based systems since our board using Intel Edison. The text recognition will be recognized and send to cloud computing service via wifi.

3.2. Cloud computing services

Cloud computing services is a type of internet-based computing that provides shared computer processing resources with various capabilities to store and process their data in third-party data. The cloud is use to process data quickly instead of process in the board. The text recognition that had been detected will match up by using tesseract optical character recognition library. Optical character recognition is the process of electronically extracting text from images and reusing it in a variety of ways including language translates and text to speech converter.

3.3. Text to speech

Intel Edison received back the process output from cloud server. The small speaker will be mounting in the spectacle to execute the sound of the translated language. User can now understand the text image that had been capture by hearing the sound from spectacle.

3.4. Timeline project

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| No. | Task | 2016 | | | | | | | | | | | | | | | | |
| September | | | | October | | | | November | | | | | December | | | |
| 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 |
| 1 | Literature review |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 | Study Intel Edison |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | Study yocto project |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | Image processing on Intel Edison |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

Fig. 2: Gantt chart of project

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| No | Task | 2017 | | | | | | | | | | | | | | | | |
| January | | | | February | | | | March | | | | | April | | | |
| 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 |
| 6 | Tesseract OCR library |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | Text to speech converter |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 | Hardware implementation |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 | Testing and tuning language |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 | Report writing |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 11 | Final paper submission |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

Fig. 3: Gantt chart of project

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| No | Task |  | | | | | | | | | | | | | | | | | | | | |
| January | | | | February | | | | March | | | | | April | | | | May | | | |
| 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| 5 | Connect to cloud |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 | Tesseract OCR library |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | Text to speech |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 | Design Hardware |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 | Testing and tuning |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 | Report writing |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 11 | Final paper |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |