Developing an Aid to Help the Visually Impaired to Navigate at MTR Platform

BEngCE Final Year Project 2014/15 by NG Ho Ming (Supervisor: Dr. YUEN Shiu Yin)

MTR is one of the major means of transport for the visually impaired people (VIP). However, many VIP find that navigating in MTR stations is challenging due to the irregular and complicated structure of the stations, especially for those stations they seldom visit or have never visited before. The difficulties of VIP in navigation could lengthen the travel time and cause inconvenience to their journey.

Therefore, an aid utilizing the iBeacon and iPhone is developed to provide information, such as the user current location, the location of escalators, the distance to the escalators, the exits which the escalator leads to, etc. to help the VIP to navigate at MTR platform. With the VoiceOver function of iOS switched on, user tapping different parts of the screen can hear the corresponding auditory response reading out the information.

The aid has been field tested in an MTR platform and is found to work well. The testing can be viewed at <https://youtu.be/qPim_4rZqFE>. Through this proof-of-concept study, it is hoped this aid can be modified or further improved for possible applications in different circumstances to improve the living quality of VIP.

The system is quite accurate (since it either receives the signal or not and the power of the i-beacon transmitter can be tuned) and cheap (e.g. HK$300 /i-beacon x 40 i-beacon per station = HK$12,000/ station. It can be used continuously for 2 years.)

Since each i-beacon has a unique ID and the user knows which station he is in, the app can operate even if there is no web connection due to weak signal. Thus we do not need to worry about signal strength and variations.

The full report:

H.M. Ng, "Developing an aid to help the visually impaired to navigate at MTR platform," Undergraduate Final Year Project Report, Department of Electronic Engineering, City University of Hong Kong, 2015.

is available in CityU Institutional Repository.

Update
The MTR Mobile App will use beacon technology for internal navigation in Rail Gen 2.0 (MTR Press release 31/August/2017)

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