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Ngee Ann Polytechnic Student - Intelligent Walking Aid

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NGEE ANN POLYTECHNIC STUDENTS

Intelligent Walking Aid

Beneficiary country: Singapore / Asia



It is a challenge for the visually handicapped to move about on their own and existing mobility training by the Singapore Association for the Visually Handicapped (SAVH) encourages the visually handicapped to memorise the routes they will be using every day, restricting their opportunities to venture into new places on their own. Two innovative graduates from Ngee Ann Polytechnic have created a prototype walking aid that is more interactive in nature and will allow for the visually handicapped to discover new places, independently.

Organisation Bio

Mainmunah Bte Nokman and Lim Yu Ling are graduates of Singapore's Ngee Ann Polytechnic School of InfoComm Technology. They conceptualised the Intelligent Walking Aid as a tool that can "talk" to visually-handicapped users. The pair is currently working with the Singapore Association of the Visually Handicapped (SAVH) to produce an improved prototype that could be available commercially in about two years.

<http://www.np.edu.sg/home/spotlight/Pages/eXtraArticles.aspx?type=feature&year=2010&month=Feb&articlenum=4#focus>

The team proposes to develop a system to allow the visually handicapped to navigate their way around with the help of a hearing aid that makes use of Radio Frequency Identification Technology (RFID), assisted-GPS technology as well as digital compass.

THE THEORY/PROBLEM

It is a challenge for the visually handicapped to move about on their own and existing mobility training by the Singapore Association for the Visually Handicapped (SAVH) encourages the visually handicapped to memorise the routes they will be using every day, restricting their opportunities to venture into new places on their own.

THE INNOVATIVE IDEA

The team proposes to develop a system to allow the visually handicapped to navigate their way around with the help of a hearing aid that makes use of Radio Frequency Identification technology (RFID), assisted-GPS technology as well as digital compass. A stick device allows users to get information about their current location, directions to destinations and their orientation. The user will carry the walking stick and the mobile device. The RFID reader will pick up the RFID tags on the way and the mobile device will tell the user where he is heading.

The idea will introduce a new use for RFID, which is normally used for item tracking and commerce. Braille buttons will also be integrated into the walking stick.

HOW IT WORKS

The project has two phases of implementation, the first of which has been implemented at Ngee Ann Polytechnic's School of InfoComm Technology. The second phase extends the system implementation to the whole of Ngee Ann Polytechnic. If the pilot proves successful, the team will implement the system in SAVH. The team intends to set up a social enterprise that makes use of technology to help the visually handicapped.

STEPS TAKEN TO IMPLEMENT PROJECT

- The team has divided the phases of development according to a time frame of one year so that major milestones will be achieved by the 4th, 8th and 12th months.
- The team has changed its focus from commercialisation to more research and development.
- This shift was made based on feedback received from SAVH as well as testers of the product. This would allow the team to enhance the functions of the walking stick to better suit the user.



Mr Andrew Tan, lecturer from Ngee Ann Polytechnic, one of the advisers for the Intelligent Walking Aid Project.





From left, Maimunah Nokman and Lim Yu Ling with the first prototype and demonstrating the usage at Ngee Ann Polytechnic



From left, Maimunah Nokman and Lim Yu Ling receiving the award for the Lien i3 Challenge during the awards ceremony at SMU on the 23rd of October 2009

IMMEDIATE CHALLENGES TO PROJECT

- As the team has set up what is a relatively new organisation, it does not have the proper environment to carry out research and development.
- The team's alma mater, Ngee Ann Polytechnic has provided a suitable office area so that work can be carried out.

CHALLENGES THAT HAVE ARISEN, WHICH WERE NOT ANTICIPATED WHEN DRAFTING PROJECT PROPOSAL

- Initially the team proposed to have the product as a separate piece of equipment.
- After receiving feedback from SAVH, the team realised that the visually handicapped community are reluctant to use an instrument that requires technological know-how and would prefer the project to be an add-on to their existing mobile phones.
- With new technology platforms being created all the time, the challenge is to consistently check programme codes to make sure there is compatibility with the old models of mobile phones.

COMMUNITY RESPONSE TO THE PROJECT

- The team began developing the project as a final year project at the School of InfoComm Technology in Ngee Ann Polytechnic.
- Lecturers supported the efforts and saw the potential for it to work in a more expanded form.
- The team also met with SAVH, which gave further input to ensure that the project would be more user-friendly and feasible for the visually handicapped.
- The community has generally responded to the initiative positively, by providing support and encouragement in these early phases of research and development.

COMMUNITY CONTRIBUTION OR PARTICIPATION IN PROJECT

- SAVH has been involved from the early stages of the project to ensure that the final product will be suitable for the target audience, namely the visually handicapped community.