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INNOVATIVE ONLINE SYSTEM-BOOK SPOT!

Inventors
Dr. Nor Liyana Mohd Shuib • Nur Baiti 'Afini Normadhi

Identifying learning style and matching reading material (RM) based on learning style (LS) are critical for students as they may affect their learning progress and their rate of absorbing information. Thus, Book Spot! is developed as an online system for aiding students to seek for the best RM that matches their LS in order to optimize their progress. The invention belong's to Dr. Nor Liyana Mohd Shuib and her student, Nur Baiti 'Afini Bt Normadhi.

Book Spot! considers students' LS within its retrieval process. The development of this tool requires the reading RMs to be classified based on LS preferences. Primitive elements, such as text, graphs, and diagrams, have been chosen as identifiers for the above classification. The classified primitive elements in RM are then mapped onto LS preference. Each primitive element is standardized using identifiers from Learning Object Metadata. Content from RM is extracted and calculated using Feature Extraction algorithm. To match

students towards appropriate RM based on their LS preference, k-Nearest Neighbour classification model is used. **Book Spot!** uses hybrid recommender method; knowledge based and collaborative filtering method to recommend RMs for students. This product is initiated under University Malaya Bantuan *Kecil Penyelidikan* Grant entitled *A Hybrid Filtering Method For Reading Material Recommendation* (BK045-2013). **Book Spot!** can be commercialised as an added module for available search Engine like Google, Yahoo etc. and e-learning software.

This innovation has won several awards such as the International Engineering Invention & Innovation Exhibition 2015 (Gold Award), Invention, Innovation & Design Exhibition 2015 (Gold Award), International Innovation, Design and Articulation (I-IDeA 2014) (Best Award and Gold Medal), Conference, Competition and Exhibition, Politeknik Seberang Perai, 2014 (Gold Award), and EUREKA Innovation Exhibition

Dr. Nor Liyana Mohd Shuib and her student, Nur Baiti 'Afini Bt Normadhi at International Engineering & Innovation Exhibition 2015 (Gold Award)

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GnGo-MOBILE QUEUE MANAGEMENT AND NAVIGATION SYSTEM FOR UNIVERSITY OF MALAYA MEDICAL CENTRE (UMMC)

Long queue by outpatients has been a problem for long at University of Malaya Medical Centre (UMMC). Patients very often have to turn up much earlier than their appointment time to get a queue ticket so that they can be seen by the doctors early. Moreover, the patients have to spend time to search for the counter(s) to get their queue tickets or the clinic(s) where they will be seen by the doctors. Waiting time at the lounge before they are seen by the doctors can be long as well. Visitors and patients have difficulty to reach a location in UMMC too, especially when they have to visit several different clinics or departments during a visit.

The idea of QnGO was initiated in order to overcome the problems. QnGO allows users to get e-tickets according to their appointment time with University of Malaya Medical Centre (UMMC) and provides navigational guides for them to reach their destinations in the hospital through mobile phones. The queuing subsystem (Q) will recommend the time of arrival at the hospital and update the expected waiting time to the users. The navigation subsystem (GO) supports both online and offline navigation within the UMMC building complex. With the two subsystems, QnGO gives users a sense of certainty on time and direction about their visit to the hospital. These time and effort saving features greatly improve patients' experience when visit UMMC. Moreover, the applicability of the concept in other environments promises huge commercialization potential of QnGO.

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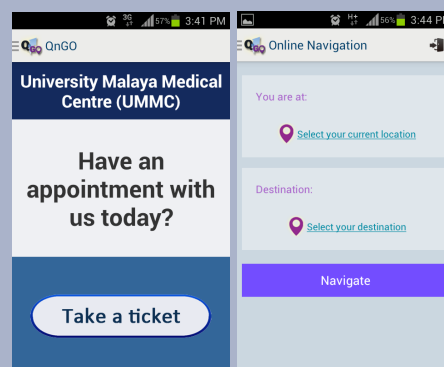
The Q subsystemuses one e-ticket throughout the whole process of seeing a doctor in UMMC.

The GO subsystemprovides navigational guides in order for patients and visitors to reach their destination from one point to another in UMMC.

QnGO has been selected as one of the 50 national finalist projects in MyInovasi 2014 and awarded a gold medal in the Invention, Innovation & Design Exposition (iidex2015) held at UniversitiTeknologi Mara, Shah Alam, 27-30 April 2015.

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SYRINGE KNEE PRESSURE MONITOR FOR OSTEOARTHRITIS ASSESSMENT

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Osteoarthritis (OA) is the most common degenerative disease among the elderly. Over 80% of knee OA accompany with knee joint effusion which is a condition where accumulation of excessive synovial fluid within knee synovial joint. The presence of the knee effusion causes elevation of intra-articular pressure and instability of the knee joint.

Existing methods/technologies used to detect knee effusion include intra-compartmental pressure monitor system, physical test (patella tap test) and also medical imaging (X-ray, MRI, CT scan). These methods have several complications, such as invasive, associated with risk of infection, no quantitative result, time consuming and also exposure to radiation.

Syringe Knee Pressure Monitor is a novel, convenient and non-invasive method used to detect and monitor knee effusion. The operational principle is based on rebound magnitude of patella. First of all, patients have to put on special designed syringe on patella with knee in full extension position and then, put on air compression knee brace and pump in 40mmHg of air in order to compress all the excessive synovial fluid around the knee joint toward the central of the knee. The plunger of syringe is pressed until LED lights up so that the standard force applied is pushing patella to strike on the femur bone. After that the applied force is released. There is a vibration sensor attached on the syringe used to detect the rebound magnitude of patella and a microcontroller to carry out all the processing procedure. Finally the result of knee swelling magnitude will be played on LCD display. Reading obtained by the Syringe knee pressure monitor shows the range of swelling. This can help doctors or even patients themselves to monitor the knee effusion from time to time.

Syringe Knee Pressure Monitor has a huge commercialization potential because there is no any non-invasive method that can be used to objectively quantify knee effusion so far. Besides that,Syringe Knee Pressure

Monitor is simple and cost effective, even can be used for non-clinical people. The uniqueness of this product, is that is comes with 2 in 1 function, it not only can monitor knee effusion but also can be used to for therapy purpose to reduce knee swelling.

The total population in Malaysia is around 30 million. 10% of which is around 3 to 4 million that falls into the category of elderly and they arethe higher risk group who suffer from osteoarthritis. With this estimated number of potential users, demand for this technology is expected to be high.

This invention has won 1st Prize in the Inclusive Innovation Competition Challenge 2015 organized by Ministry of Science, Technology and Innovation (Malaysia) MOSTI and Gold Award at International Engineering Invention & Innovation Exhibition (i-ENVEX) 2015 at Universiti Malaysia Perlis (UNiMap), Malaysia.

Photo 1: OA patients with knee effusion

Photo 2: Syringe Knee Pressure Monitor

Photo 3: Air Compression Knee Brace

Photo 4: Syringe Knee Pressure Monitor is fit on patient's leg

Photo 6: Result obtained from Syringe Knee Pressure Monitor

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