

MyDNAmark by Nur Shuhada

My DNA Mark is a Crowdsourcing Biodiversity Tagging Application created by a team consists of Biology and Computer Science Students. This project is the first biodiversity mobile application in Malaysia which feature the real-time data collection function and the first mobile application in the world to link with the DNA sequence database. The main purpose of this apps to ease the current data collection for biodiversity log which are mainly conducted by scientist. We were told that the current process is still conducted manually and the fragmented recording process are done separately thus resulting a very time-consuming process.

The apps main idea:

See animal – Snap picture – Key in information – Automated location tagging using GPS – Detection of the species by system database – Update on the digital database

Apps Component & Speciality:

- Got exploration page which is = connected to other main databases e.g.; Google Scholar etc
- Got DNA data = mainly about genome = enables comparison to other species of different region
- Open to all (A portable biodiversity encyclopaedia) = got identifier/researcher that will review or verify all input



Benefits of the product :

- Instantaneous data collection process
- Secure & Accurate
- Industrial Revolution (IR) 4.0 ready
- Potential for big data analysis and data mining



INTRODUCTION

Johor Bahru - On 1st October 2019, four Data Engineering students from Universiti Teknologi Malaysia (UTM) attended the Innovate Johor 2019 which took place in Sultan Iskandar Hall, UTM. Innovate Johor 2019 is a collaboration program with UTM as the main organizer and cooperation from the State of Johor Government. This annual event serves as a platform for researchers and experts from the whole nation to be able to showcase and promote their research and potential products to other industrial players and the public. The main objective of the program is to inculcate innovations and inventions for school students and researchers community in Johor. Through this program, visitors will be inspired and have better understanding on the need of creating innovation for a better living environment. Many innovation researches and products were showcased that day, among them are a biodiversity tagging app, a cancer analysis software, a self-cleaning water reclamation system, Palf brick, nanostructured membrane for water treatment, a carbon footprint calculator and a multi sensory smart room. The trends in Innovate Johor 2019 were diversified as the inventions features environment, education, health, biotech and communication technology. Some of the inventions used Internet of Things (IoT) which is now a common thing in our daily lives, with IoT their inventions become more automated, for example the self-cleaning water reclamation system while some can even manage and analyse data, for example the cancer analysis software. The inventions provide solutions to reduce time consumption and man power especially in industries. Among all the booths, we managed to visit the MyDNAmark, iSurvive, SELF CLEANING WATER RECLAMATION SYSTEM and PALF BRICK.



SELF-CLEANING WATER RECLAMATION SYSTEM by Tong Ming

This self-cleaning water reclamation system is an automated cleaning technology which treats the industrial effluent into clean water, and the main target users are the water intensive industries such as textile, palm oil and agriculture industries. The filtration basis of the system is actually just like a cell membrane, it filters out the pollutants and allow the fresh water to pass through back. This system has sensors for automated cleaning which can enhance the sustainability of the membrane technology, so not only it reduces the consumption of fresh water, moreover it can be easily retrofitted into existing water treatment process without hassle and reduce the production cost of the industry. From an interview with one of the project members, Mahesan, we also know that Malaysia is producing about 2.97 billion cubic metres of effluents as of today, and the system is actually able to reclaim 80% of the effluents after various collaboration work and tests done with the industries. This system is also currently being parked in a palm oil plantation in Bintulu, Sarawak. One thing I like about this innovation is because of its environment friendliness where it reduces the impact of effluent pollution towards the water bodies serving the community. Take palm oil effluents for example, the blue colouring pigments of palm oil will be degraded and destroyed by the photocatalytic membrane before releasing to the water bodies, so the aquatic ecosystem is maintained and preserved.



Novelty:

- Efficient removal of pollutants without producing secondary waste
- Reclamation of fresh water which can be channelled back into the plant
- Photocatalytic membrane activated by sunlight
- Utilisation of easily scaled up fabrication technique and advanced materials

Benefits:

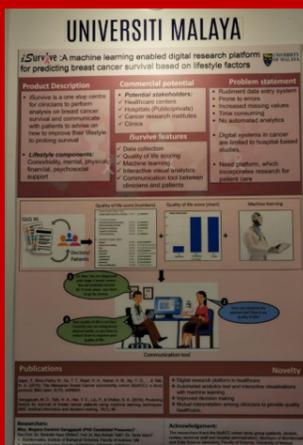
- > Automated system which requires minimal monitoring
- > Simple and affordable technology
- > Can tackle a wide range of effluents
- > Can be easily incorporated into water intensive industries
- > Environmental friendly



Photo of us with Mahesan

iSurvive by Tee Hui You

iSurvive is a software developed by researchers from Bioinformatic's department, Faculty of Science, University of Malaya. The software uses Machine Learning to predict cancer patient's daily lifestyles. Patients' data are collected by research assistants before patients consult with the doctors. As cancer patients won't be hospitalized for long, doctors can check whether they practise correct lifestyle during the next consultation and provide more specific advices to the patients throughout the survival period of cancer patients.



Benefits:

- predict and improve lifestyle of cancer patients
- shortening time spent by patients to discuss with doctors
- provide relatively accurate information to the patients
- allows doctors to give more accurate advice to the patients

In the Future

The patients can install this software in their mobile phones to always keep updated.



By Nur Shuhada, Hui You, Tong Ming, Imran

Nur Shuhada:

- This apps is very helpful to those in biodiversity sector and would help largely reduce the cost for each process conduct
- However, the benefits are not only for those professionals, in fact for general use as hunters, active campers/hikers can use this apps to detect all the wildlife around their area
- This apps is a huge successful and major improvement for the society

In general, this trip to Innovate Johor made me realised how the Science and Technology in our country has evolved that it's making such amazing innovation and creation which benefits mankind very well.

Imran:

I sincerely believe that the palf brick can make it into its targeted markets and greatly benefit many parties, further improve construction quality. In conclusion, Innovate Johor has multiple innovations that would greatly benefit society.

Tee Hui You:

Surprisingly, there are various kind of researches available. Computer Science knowledges was used in unexpected fields such as water purifying system. It was a good exposure towards the industries too.

REFLECTION

Tong Ming:

I am very happy to have visited Innovate Johor 2019 as it has widely opened my eyes on the various innovations invented. I was amazed on how Artificial Intelligence (AI) is used in the water reclamation system and becomes automated which can minimize monitoring. The system has truly benefitted the industries while preserving Mother Nature at the same time. From the many booths there, I learnt that creativity, soft skills and motivation are the ingredients of innovation. I must have strong desire to learn and develop critical thinking skills to solve problems in daily life, and to create change to the world for a better environment.

PALF BRICK by Imran Hakim

The Palf Brick is an eco-friendlier alternative to the traditional brick, which is the main aim of its creation. The un-burnt brick is composed of clayey soil and pineapple leaf fibres. The palf brick has many benefits of its use compared to its traditional counterparts; the standard clay brick and the hollow brick. Some of the aspects are its thermal performance, economical value, production value and its impact to the environment. The team behind this ambitious project mainly consist of postgraduate students from the School of Civil Engineering, under the Department of Structure & Materials. The main hope of this project is to make the brick more commercial in potential markets such as the construction and manufacturing industry.

Benefits:

- Promotes a comfortable thermal environment at home.
- Improved thermal resistance, thus reducing the energy consumption due to the active cooling system inside a building.
- Improves the quality of life.
- Reduces the common and widespread open burning activities of pineapple farms after harvesting season.
- Reduces the carbon footprint which contributes to global warming.



Application :

- Brick walls
- Fire resistance walls
- Partition