Newton Fund: Institutional Links 2019/2020

Teesside University and King Mongkut's University of Technology Thonburi

Schedule for The Workshop on Digital Health

Date: 26 February 2021

Time: 1:30PM – 4:30PM (UTC+07:00 Bangkok)

Venue: Online via Zoom

Meeting URL: https://kmutt-ac-th.zoom.us/j/98856085725

Meeting ID: 988 5608 5725

**** Talk #1 1:30PM – 2:30PM**

Title: Backend Design and Development of a Participatory HFMD Surveillance App

Speaker: Mr. Bunyarit Puangthamawathanakun
School of Information Technology, KMUTT, Thailand

Abstract:

A digital surveillance platform can be an effective digital health tool for a fight against outbreaks of emerging and recurring infectious diseases. This talk presents design considerations and tradeoffs of the backend services of a participatory HFMD surveillance platform as a relevant case study. Use of software engineering principles and modern tools and techniques to effectively address various challenges specific to the digital health domain is discussed that includes the architectural design, storage service design, version control, development and production details and constraints as well as the development framework. The presentation will cap off with a demonstration of the backend services implementation based on the ongoing development of a participatory HFMD surveillance app.

Short Bio: Mr. Bunyarit Puangthamawathanakun

Bunyarit Puangthamawathanakun is from Thailand. Currently, he is working as a software engineer and research assistant under Dr. Chonlameth Arpnikanondt. He received his bachelor's degree in Computer Science in 2021 from the School of Information Technology, KMUTT, Thailand. He has background in backend development, web application design and development, and database management.

**** Talk #2 2:30PM – 3:30PM**

Title: Machine Learning for Medical Image Processing

Speaker: Mr. Suraj Verma

Teesside University, Tees Valley, UK

Meeting URL: https://kmutt-ac-th.zoom.us/j/98856085725

Meeting ID: 988 5608 5725

Abstract:

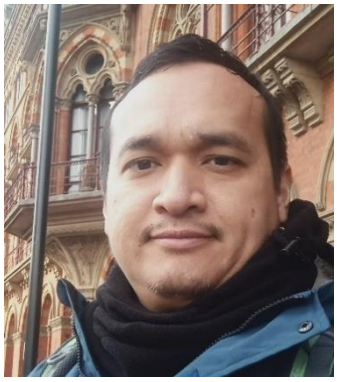
Over the years, Machine Learning and Artificial Intelligence have made an enormous impact on various sectors, particularly in medical field. Techniques of Machine Learning and Artificial Intelligence have played important role in this field in solving various problems such as medical image processing, computer-aided diagnosis, image interpretation, image fusion, image registration, image segmentation, image-guided therapy, image retrieval and analysis. In this session, we will explore the application of deep learning for biomedical image processing for the detection of diseases. This session will focus on two types of medical images: I) clinical dermatological images and II) Radiological images. Firstly, we will discuss skin disease classification using image processing techniques and Convolutional Neural Network. Secondly, we will explore radiological images and use U-Net architecture for the segmentation of Non-Small-Cell-Lungs cancer from CT scan images. In a nutshell, we will learn techniques for the classification of disease and segmentation of tumor/cancer.

Short Bio: Mr. Verma Suraj

Suraj Verma is from Nepal and currently he is pursuing Master in Data Science from Teesside University, UK. He is also working as a Research Assistant under professor Dr. Mohammad A. Razzaque. Here, he is working on a Research project for the detection of skin diseases using AI based smartphones. Besides this project, he is also working on a project for the detection of pancreatic cancer from CT scan Images using the technique of Image processing and Deep Learning. He has completed his Bachelor degree in Computer Engineering in 2014 and since then, he had been working as software engineer for the digitalization of healthcare sector of Nepal. He has also developed applications for hospital management system and a centralized surveillance system to understand and visualize the spread of diseases in Nepal.

** Talk #3 3:30PM – 4:30PM

Title: Deploying fine-tuned Machine Learning models to Chatbot



Speaker: Mr Usanut Sangtongdee (Teddy)
Teesside University, Tees Valley, UK

Meeting URL: https://kmutt-ac-th.zoom.us/j/98856085725

Meeting ID: 988 5608 5725

Abstract:

Chatbot has become a popular choice for deployment applications. It allows machine learning models to increase engagement with users interactively. Interoperability between the messaging API and proposed models is something to keep in mind. The first part contains building chatbot components on google Dialogflow. The goal is to test a supervised model with only four features, and the dependent variable has already been labelled, for example, an Iris dataset. We use a basic classifier that has been defined and fit with a model. After that, it is saved as a pickle format capable of handling python objects. Straightforward to the image processing work, a chatbot remains capability handling input data, both texts and images. In the latter section, we have designed a line messaging API that works with TensorFlow. Flask is applied as a robust web framework to integrate with python libraries. Dealing with image files is different from text messages. Therefore setting parameters both in the code and on the platform, such as Dialogflow, is a matter of consideration. In short, to apply a chatbot for testing learning models, developers have to determine general system requirements. A cloud environment can be the right choice when projects are large and require administrative expertise. Running on either local environments or free hosting, e.g. Heroku, may be suitable for a small project with a limited budget.

Short Bio: Mr. Usanut Sangtongdee (Teddy)

Usanut graduated in information technology, which concentrated in database design from Southern New Hampshire University, the US. He currently studies a doctoral degree in computer science at Teesside University in the UK. He has got a scholarship from the Thai government. He has joined a research team in this project since mid-2020.