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TECHNICAL TALK
MALAYSIAN SPACE AGENCY (MYSA)

ARTIFICIAL INTELLIGENCE IN REMOTE SENSING

JOINTLY ORGANISED BY:

MALAYSIAN SPACE AGENCY (MYSA)
MINISTRY OF ENERGY, SCIENCE, TECHNOLOGY, ENVIRONMENT & CLIMATE CHANGE (MESTECC)

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)
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MALAYSIA CHAPTER

SEMINAR HALL,
MALAYSIAN SPACE AGENCY (MYSA),
KUALA LUMPUR

24 SEPTEMBER 2019

Design and Development of Computational Intelligence - Based Models and Their Application to Aerial Imagery

Prof. Lim Chee Peng,
Deakin University, Australia

Prof Lim Chee Peng from Institute for Intelligent Systems Research and Innovation (IISRI) Deakin University, Australia presented on Computational Intelligence (CI) models and their applications. As part of Artificial Intelligence (AI), CI exhibits several key characteristics of human intelligence such as learning, adaptability, reasoning and decision making with the use of data. A number of CI-based models, which include neural, fuzzy, and evolutionary computing paradigms, have been introduced. Prof Lim has shown several videos related to CI applications that have been produced by IISRI to solve real-world problems. Prof Lim also presented several specialised CI-based system for data analytics and decision support. He emphasized that CI can play an important role as an effective approach to solving problem within geoscience and remote sensing field. Case studies on utilising CI models in the domains of aerial imaging have been discussed and demonstrated. In summary, to fully exploit the potential of CI, Prof Lim said we need to learn the technologies from the beginning, and we need to learn continuously and from experiences of others. All researchers, developers, and practitioners need to work together in order to deliver innovative and pragmatic solutions using CI-based technologies.

Oil Palm Plantation Monitoring from Satellite Images Using Deep Learning

Assoc. Prof. Dr. Mohd Asyraf Zulkifley,
Universiti Kebangsaan Malaysia (UKM)

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Artificial Intelligence Applied to Rapidly Interpret Geospatial Data at Scale

Mr. Drew Perez,
Adatos Pte.Ltd, Singapore

initiative, 23% has AI pilot projects and the other 23% incorporated AI in their processes and offerings. AI can perform all the functions of a GIS analyst or Agronomist including land use/land cover classification and tree inventory accuracy with an accuracy >98%, oil palm identification at very large scale 76,000,000 ha = 60 TB data and custom disease monitoring across >22,000,000 ha/year. The future precision agriculture with AI will provide fully automated analysis performed in minutes to hours, full package of image and analysis, automated verification, near real time and timely information to efficiently manage yield, supply and demand, and trade investment. Mr Drew emphasized adopting Artificial Intelligence that automated building AI algorithms to address the global shortage of data scientists; and democratize the deep technology to facilitate the immediate adoption of AI capabilities by non-data scientists such as Agronomists and GIS analysts.

Discovering Many Possibilities using GeoAI Powered by ArcGIS

Mr. Firdaus Asri,
ESRI Malaysia

Mr. Firdaus Asri from ESRI Malaysia introduced Geospatial Artificial Intelligence (GeoAI) as one of ESRI product launched in 2018. GeoAI is integrating Deep Learning (DL) in ArcGIS contain Machine Learning (ML) tools such as classification, clustering and prediction. The relationship between AI, ML and DL technologies was explained as a complete set of advance technology, beginning with the smallest and working out. DL is a subset of ML, and ML is a subset of AI, which is an umbrella term for any computer program that does something smart. In other words, all machine learning is AI, but not all AI is ML, and so forth. Organizations across industries can utilize GeoAI to detect deep and complex spatiotemporal patterns in their data, detect objects, accurately label pixels in images, and predict geospatial events of interest at scale and in time. He also discussed the capabilities of real-time mapping, reporting and analytics can be adapted to suit multiple applications such as monitor traffic congestions, land cover classification, assess damaged infrastructure, predict accidents, assess trees and vegetation and also smart road digitization. As a conclusion he highlighted the challenge for getting everyone to seemlessy work together in order to apply the AI, ML and DL concept in improving service efficiency and agency operations.

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