INTERVIEW WITH PROF. RIYANARTO SARNO

GUEST EDITOR: SHINTAMI CHUSNUL HIDAYATI

Short-bio

Riyanarto Sarno received the M.Sc. and Ph.D. degrees in computer science from the University of New Brunswick, Canada, in 1988 and 1992, respectively. He is currently a Professor with the Department of Informatics, Faculty of Intelligent Electrical and Informatics Technology, Institut Teknologi Sepuluh Nopember, Indonesia. He is also an experienced consultant in Information System Audit, Governance and policies. His research interests include Artificial Intelligence in Health Applications, Big Data, and the Internet of Things. He received several prestigious research awards and was featured among the world's top 2% scientists published by Stanford University in 2020 and 2021.

How long have you been in the world of AI for healthcare, and what innovations did you implement?

I have been implementing AI for healthcare since 2010; my motivation is to improve the quality of healthcare by employing several AI methods. The innovations are detecting blood glucose based on urine color analysis, detecting blood glucose based on breath analysis, and detecting Covid-19 based on the odour of axillary sweat.

What sparked your interest in these areas?

AI can develop non-invasive methods for detecting diseases.

What has been the most challenging project you have undertaken to date, and how did you face the challenges presented?

The most challenging research was the development of an electronic nose system for detecting Covid-19 based on the odour of axillary sweat, because it was the first project in the world when I started the research in May 2020. Thus, there were no references about Volatile Organic Compounds (VoC) of human axillary sweat odour; also there was no information about gases of axillary sweat odour. In addition, there were no references about the metabolomics of Covid-19 in order to recognize the effects of SARS-CoV-2 viruses to the VoC of a human axillary sweat odour.

I have been facing the challenges by collaborating among an AI team, medical doctors specialty in Covid-19, an instrumentation team, data collection teams, and many hospitals. Hundreds of Covid-19 patients and healthy people (negative from Covid-19) participated in this research. I received research funds from AUN-JICA, the Government of Indonesia, and a medical equipment industry.

One of the significant elements of this research is involving patients. Could you talk a bit about what you think are potential factors for the success or failure of patient involvement strategies in general?

A research involving patients has to respect for the patients, minimize the risks for the patients, develop non-exploitative procedures; therefore, clinical ethical clearance has to be arranged before collecting data from the patients.

What key issues do you think researchers and scientific societies will face in the next decade, especially those who work on AI for healthcare in developing countries, and how do you think these should be approached?

AI for healthcare needs collaboration of computer scientists, medical scientists and practitioners, and many other scientists from different fields. In developing countries especially, the collaborations are still not optimal. Therefore, researchers and scientific societies should motivate, promote, and establish the integrated collaboration for advancing AI for healthcare.

In your opinion, how could healthcare innovations benefit from technology giants and incubators?

Technology giants and incubators can support the implementation of AI for healthcare; however, it is not easy to get their research support especially in developing countries.

If you are granted three wishes by a higher being, what would they be?

I wish industries to utilize several of my patents about AI for healthcare.

Do you have a short message of encouragement to young researchers potentially interested in contributing to advancing technology for humanity?

For advancing technology for humanity, I encourage young researchers to develop collaboration among academia, industry, government, and community. The collaboration can be established by promoting the researches through publications in journals, conferences and popular magazines as well as exhibitions.