



Webinar on Healthcare IoT

The Third Edition



IEEE Communication Society eHealth Technical Committee: Special Interest Group on "IoT for eHealth" and



Technical Committee Green Computing and Communications: Special Interest Group on "Pandemics"



Dr. **Rongxing Lu**

IEEE Fellow, University Research Scholar
Associate Professor, Faculty of Computer Science
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Title: Towards Privacy-Preserving Remote eHealthcare Monitoring with Reverse Skyline Query

Abstract: With the flourish of Wireless Body Area Network (WBAN), the online medical monitoring system has attracted extensive attention. Meanwhile, due to the limited resources, the hospital tends to outsource the medical services to the cloud and requires the patients' data to be encrypted before uploading. It is bound to raise a challenge in data availability, e.g., the reverse skyline query that is widely used in monitoring systems. In this work, we propose a privacy-preserving online medical monitoring system, in which the cloud can answer the reverse skyline query over encrypted data and return the monitored data of high-risk patients to a doctor. To achieve this goal, we first design four secure protocols that can ensure the security of operands while minimizing the communication costs between two cloud servers. Based on these privacy-preserving protocols, we propose two privacy-preserving reverse skyline query schemes that can be used in the monitoring system. Security analysis shows that our proposed scheme is indeed privacy-preserving, and performance evaluations also demonstrate the efficiency of our scheme in terms of computation and communication.



Prof. **Vojislav B. Mišić**

Department of Computer Science
Ryerson University
Toronto, Ontario, Canada

Title: Towards a blockchain-based healthcare information system

Abstract: Healthcare information systems are the next big application area for Blockchain technology. However, straightforward extensions of existing digital cryptocurrency systems such as Bitcoin and Ethereum results in systems that are unsuitable for the stringent requirements posed by healthcare systems. These include the need for data owners to explicitly grant or revoke authorizations for other actors to access healthcare data. Furthermore, all accesses, successful or not, should be recorded on the blockchain as separate transactions, thus ensuring transparency and privacy protection. After reviewing those requirements in some detail, we describe an architecture for a blockchain-based healthcare information system in which block validation is performed through collective signatures initiated by a designated leader and executed by a pool of witnesses, while owner's authorizations use a smart-contract based approach. Finally, we describe the setup in which different kinds of transactions are grouped into categories that are validated by orderer quorums of different size, thus allowing for flexible, geographic area-based transaction and block validation.



Prof. **Ravinder Dahiya**

IEEE Fellow, Electronics and Nanoengineering
EPSRC Research Fellow,
James Watt School of Engineering
University of Glasgow, UK

Title: E-skin: From Robots to Humans

Abstract: Inspired from human skin, the electronic skin (e-skin) technology is being explored to provide tactile feedback in robotics and prosthetics. In this regard, a wide range of technologies have been developed, including various types of soft and stiff sensors and flexible electronics. These advances have also opened new applications fore-skin, particularly in the field of health monitoring and rehabilitation. For example, in conformal contact with body parts, the e-skin offers non-invasive means to monitor key physiological parameters or the chronic diseases. This talk will cover such healthcare advances in enabled by e-skin technology.

Principal Host: **Prof. Sudip Misra, IIT Kharagpur, India**
Co-Host: **Dr. Arijit Roy, University of Luxembourg, Luxembourg**
Co-Host: **Dr. Ayan Mondal, IIT Indore, India**

More details can be found [here](#)
Date: **December 1, 2021**
Time: **6:30 PM - 8:45 PM, Indian Time (IST)**



All participants need to pre-register by November 30, 2021 by filling-up the following form: [Registration Link](#)
Zoom sign-in details will be shared with the registered participants using the email address provided in the registration form.