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Volume 313

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Advances in Networked-Based Information Systems

The 24th International Conference on Network-Based Information Systems (NBiS-2021)

Springer

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Welcome Message from NBiS-2021 Organizing Committee

We would like to welcome you to the 24th International Conference on Network-Based Information Systems (NBiS-2021), which will be held at Asia University, Taichung, Taiwan, from September 1 to September 3, 2021.

The main objective of NBiS is to bring together scientists, engineers, and researchers from both network systems and information systems with the aim of encouraging the exchange of ideas, opinions, and experiences between these two communities.

NBiS started as a workshop and was held for 12 years together with DEXA International Conference as one of the oldest among DEXA Workshops. The workshop was very successful, and in 2009 edition, NBiS was held at IUPUI, Indianapolis, USA, as an independent international conference supported by many international volunteers. In the following years, NBiSs was held in Takayama, Gifu, Japan (2010); Tirana, Albania (2011); Melbourne, Australia (2012); Gwangju, Korea (2013); Salerno, Italy (2014); Taipei, Taiwan (2015); Ostrava, Czech Republic (2016); Toronto, Canada (2017); Bratislava, Slovakia (2018); Oita, Japan (2019); and Victoria, Canada (2020).

It is our honor to chair this prestigious conference, as one of the important conferences in the field. Extensive international participation, coupled with rigorous peer reviews, has made this an exceptional technical conference. The Technical Program and Workshops add important dimensions to this event. We hope that you will enjoy each and every component of this event and benefit from interactions with other attendees.

Since its inception, NBiS has attempted to bring together people interested in information and networking, in areas that range from the theoretical aspects to the practical design of new network systems, distributed systems, multimedia systems, Internet/Web technologies, mobile computing, intelligent computing, pervasive/ubiquitous networks, dependable systems, semantic services, and scalable computing. For NBiS-2021, we have continued these efforts as novel networking concepts emerge and new applications flourish. In this edition of NBiS, many papers were submitted from all over the world. They were carefully reviewed and only high-quality papers will be presented during conference days.

The organization of an international conference requires the support and help of many people. A lot of people has helped and worked hard for a successful NBiS-2021 technical program and conference proceedings. First, we would like to thank all the authors for submitting their papers. We are indebted to track co-chairs, program committee members, and reviewers who carried out the most difficult work of carefully evaluating the submitted papers. We would like to express our great appreciation to our keynote speakers for accepting our invitation as keynote speakers of NBiS-2021.

We hope that you have an enjoyable and productive time during the conference.

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NBiS-2021 Keynote Talks

Big Data Management for Data Streams

Wenny Rahayu

La Trobe University, Melbourne, Australia

Abstract. One of the main drivers behind big data in recent years has been the proliferation of applications and devices to generate data with high velocity in multiple formats. These devices include IoT sensors, mobile devices, GPS trackers, and so on. This new data generation, called data streams, requires new ways to manage, process, and analyze. These data streams drive the need for a new database architecture that is able to manage the complexity of multiple data formats, deal with high-speed data, and integrate them into a scalable data management system. In this talk, the primary motivation for using data lakes, which is new wave of database management that is underpinned by the need to deal with data volume and variety of big data storage, will be presented. Then, some case studies to demonstrate the development of big data ecosystems involving data streams will be discussed. These case studies include the development of data lake for smart factory with sensor data collection/ingestion and big data system for GPS crowdsourcing as part of a community planning.

Convergence of Broadcast and Broadband in 5G Era

Yusuke Gotoh

Okayama University, Okayama, Japan

Abstract. In order to converge broadband and broadcast, the realization of TV viewing system by mobile devices is a particularly important challenge. Action on standardized mobile communication technologies for multicast transmission started in 2006, and now Further evolved Multimedia Broadcast Multicast Service (FeMBMS) is an official component of 5G in 3GPP as an LTE-based 5G terrestrial broadcasting system. In this talk, I will introduce the technologies for the convergence of broadband and broadcast in the 5G era. Furthermore, I will introduce our recent work related to the technology of broadcasting while maintaining the compatibility with 5G mobile networks.

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