

Lecture Notes in Networks and Systems

Volume 313

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Advances in Networked-Based Information Systems

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

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Department of Computer Science
and Information Engineering
Asia University
Taichung, Taiwan

Tomoya Enokido
Faculty of Business Administration
Rissho University
Tokyo, Japan

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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.

Contents

A Monotonically Increasing (MI) Algorithm to Estimate Energy Consumption and Execution Time of Processes on a Server	1
Dilawaer Duolikun, Tomoya Enokido, Leonrad Barolli, and Makoto Takizawa	
Performance Comparison of CM and LDIWM Router Replacement Methods for WMNs by WMN-PSOHC Simulation System Considering Chi-Square Distribution of Mesh Clients	13
Shinji Sakamoto, Yi Liu, Leonard Barolli, and Shusuke Okamoto	
A Capability Token Selection Algorithm for Lightweight Information Flow Control in the IoT	23
Shigenari Nakamura, Tomoya Enokido, and Makoto Takizawa	
Join Processing in Varying Periodic and Aperiodic Spatial Data Streams	35
Wendy Osborn	
The Improved Redundant Active Time-Based Algorithm with Forcing Termination of Meaningless Replicas in Virtual Machine Environments.	50
Tomoya Enokido, Dilawaer Duolikun, and Makoto Takizawa	
Optical Simulations on Aerial Transmitting Laser Beam for Free Space Optics Communication	59
Shun Jono, Takuto Koyama, Kota Watanabe, Kiyotaka Izumi, and Takeshi Tsujimura	
Employee Management Support Application for Regional Public Transportation Service in Japan	71
Chinasa Sueyoshi, Hideya Takagi, Toshihiro Uchibayashi, and Kentaro Inenaga	

Message Ferry Routing Based on Nomadic Lévy Walk in Delay Tolerant Networks	82
Koichiro Sugihara and Naohiro Hayashibara	
A Trust-Based Tool for Detecting Potentially Damaging Users in Social Networks	94
Kaley J. Rittichier, Davinder Kaur, Suleyman Uslu, and Arjan Durrezi	
Secure Cloud Storage Using Color Code in DNA Computing	105
Saravanan Manikandan, Islam M. D. Saikhul, Hsing-Chung Chen, and Yu-Lin Song	
A Hybrid Intelligent Simulation System for Node Placement in WMNs: A Comparison Study of Chi-Square and Uniform Distributions of Mesh Clients for CM and LDVM Router Replacement Methods	117
Admir Barolli, Kevin Bylykbashi, Ermioni Qafzezi, Shinji Sakamoto, and Leonard Barolli	
Outage Probability of CR-NOMA Schemes with Multiple Antennas Selection and Power Transfer Approach	131
Hong-Nhu Nguyen, Ngoc-Long Nguyen, Nhat-Tien Nguyen, Ngoc-Lan Nguyen, and Miroslav Voznak	
An Efficient Framework for Resource Allocation and Dynamic Pricing Scheme for Completion Time Failure in Cloud Computing	143
Anjan Bandyopadhyay, Vikash Kumar Singh, Sajal Mukhopadhyay, Ujjwal Rai, and Arghya Bandyopadhyay	
Inferring Anomalies from Cloud Metrics Using Recurrent Neural Networks	154
Spyridon Chouliaras and Stelios Sotiriadis	
Method of Lyric Association Based on Mind Mapping in Collaborative Lyric Writing of Popular Music	165
Meguru Yamashita and Kiwamu Satoh	
Collaborative Virtual Environments for Jaw Surgery Simulation	179
Krit Khwanngern, Juggapong Natwichai, Vivatchai Kaveeta, Phornphanit Meenert, and Sawita Sriyong	
Deterrence-Based Trust: A Study on Improving the Credibility of Social Media Messages in Disaster Using Registered Volunteers	188
Takumi Kitagawa, Tetsushi Ohki, Yuki Koizumi, Yoshinobu Kawabe, Toru Hasegawa, and Masakatsu Nishigaki	
A Perceptron Mixture Model of Intrusion Detection for Safeguarding Electronic Health Record System	202
Wei Lu and Ling Xue	

Personalized Cryptographic Protocols - Obfuscation Technique Based on the Qualities of the Individual	213
Radosław Bułat and Marek R. Ogiela	
Personalized Cryptographic Protocols for Advanced Data Protection	219
Urszula Ogiela, Makoto Takizawa, and Lidia Ogiela	
Antilock Braking System (ABS) Based Control Type Regulator Implemented by Neural Network in Various Road Conditions	223
Hsing-Chung Chen, Andika Wisnujati, Agung Mulyo Widodo, Yu-Lin Song, and Chi-Wen Lung	
Physical Memory Management with Two Page Sizes in <i>Tender OS</i>	238
Koki Kusunoki, Toshihiro Yamauchi, and Hideo Taniguchi	
Sensor-Based Motion Analysis of Paralympic Boccia Athletes	249
Ayumi Ohnishi, Tsutomu Terada, and Masahiko Tsukamoto	
A Design and Development of a Near Video-on-Demand Systems	258
Tomoki Yoshihisa	
A Consideration of Delivering Method for Super-Resolution Video	268
Yusuke Gotoh and Takayuki Oishi	
Proposal of a Tele-Immersion Visiting System	275
Reiya Yahada and Tomoyuki Ishida	
A Study on the Impact of High Refresh-Rate Displays on Scores of eSports	283
Koshiro Murakami and Hideo Miyachi	
Assessing the Sense of Presence to Evaluate the Effectiveness of Virtual Reality Wildfire Training	289
Huang Heyao and Ogi Tetsuro	
3D Measurement and Feature Extraction for Metal Nuts	299
Zhiyi Gao, Tohru Kato, Hiroki Takahashi, and Akio Doi	
A Machine Learning Approach for Predicting 2D Aircraft Position Coordinates	306
Kazuma Matsuo, Makoto Ikeda, and Leonard Barolli	
Evaluation of Rainfall Characteristics Between 1-h Precipitation and 10-min Precipitation Observed by AMeDAS	312
Kiyotaka Fujisaki	
Numerical Analysis of Photonic Crystal Waveguide with Stub by CIP Method	320
Hiroshi Maeda	

A CCM-Based HC System for Mesh Router Placement Optimization: A Comparison Study for Different Instances Considering Normal and Uniform Distributions of Mesh Clients	329
Aoto Hirata, Tetsuya Oda, Nobuki Saito, Yuki Nagai, Kyohei Toyoshima, and Leonard Barolli	
EPOQAS: Development of an Event Program Organizer with a Question Answering System	341
Jun Iio	
Estimating User's Movement Path Using Wi-Fi Authentication Log . . .	349
Jun Yamano, Yasuhiro Ohtaki, and Kazuyuki Yamamoto	
Integrating PPN into Autoencoders for Better Information Aggregation Performance	359
Yudai Okui, Tatsuhiro Yonekura, and Masaru Kamada	
An AR System to Practice Drums	367
Kaito Kikuchi, Michitoshi Niibori, and Masaru Kamada	
A Proposal of Learning Feedback System for Children to Promote Self-directed Learning	374
Yoshihiro Kawano and Yuka Kawano	
A SPA of Online Lecture Contents with Voice	384
Masaki Kohana, Shusuke Okamoto, and Masaru Kamada	
A Dynamic and Distributed Simulation Method for Web-Based Games	391
Ryoya Fukutani, Shusuke Okamoto, Shinji Sakamoto, and Masaki Kohana	
Author Index	401