

Conference Program



The 24th IEEE International Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA 2018)



The 7th IEEE Non-Volatile Memory Systems and Applications Symposium (NVMSA 2018)



Workshop on Smart City Based on Ambient Intelligence (SCAI 2018)

**August 28 – 31, Hakodate Arena
Hakodate, Japan**

rtcsa2018.ht.sfc.keio.ac.jp
nvmsa18.github.io
scai2018.ohtsuki.ics.keio.ac.jp



Program at a Glance

IEEE RTCSA 2018

Time	Aug. 29	Time	Aug. 30	Time	Aug. 31
9:00 - 10:30	Joint Opening & Keynote 1: Prof. Onur Mutlu Main Conference Room	9:00 - 10:30	Session 4: Support for Predictability Room 1	9:00 - 10:30	Session 6: Scheduling Room1
10:30 - 11:00	Coffee Break	10:30 - 11:00	Coffee Break	10:30 - 11:00	Coffee Break
11:00 - 12:30	Session 1: Embedded Deep Neural Network Room 1	11:00 - 12:00	Joint Keynote 2: Prof. Hideyuki Tokuda Main Conference Room	11:00 - 12:30	Session 7: Cyber Physical Systems Room 1
12:30 - 13:30	Lunch	12:00 - 13:00	Lunch		
13:30 - 15:00	Session 2: Operating Systems Room 1	13:00 - 14:30	Session 5: Networking Room 1		
15:00 - 15:30	Coffee Break	14:30 - 15:00	Coffee Break		
15:30 - 17:00	Session 3: Wireless and IoT Room 1	15:00 - 16:00	Joint Keynote 3: Prof. Fahim Kawsar Main Conference Room		
17:00 - 17:30	Demo/Poster Preparation Main Conference Room	16:00 - 16:30	Social Program Guidance Main Conference Room		
17:30 - 20:30	Reception, Demo/Poster Main Conference Room	16:30 - 20:30	Social Program & Banquet		

IEEE NVMSA 2018

Time	Aug. 29	Time	Aug. 30	Time	Aug. 31
9:00 - 10:30	Joint Opening & Keynote 1: Prof. Onur Mutlu Main Conference Room	9:00 - 10:30	Session 4: I/O and Caches Room 2	9:00 - 10:30	Session 6: NVM Storage Room2
10:30 - 11:00	Coffee Break	10:30 - 11:00	Coffee Break	10:30 - 11:00	Coffee Break
11:00 - 12:30	Session 1: Best Paper Candidates Room 2	11:00 - 12:00	Joint Keynote 2: Prof. Hideyuki Tokuda Main Conference Room	11:00 - 12:30	Session 7: Novel Devices Room 2
12:30 - 13:30	Lunch	12:00 - 13:00	Lunch		
13:30 - 15:00	Session 2: Invited Talks I (ImPACT Special Session) Room 2	13:00 - 14:40	Session 5: Short Presentations Room 2		
15:00 - 15:30	Coffee Break	14:40 - 15:00	Coffee Break		
15:30 - 17:00	Session 3: Invited Talks II (Top of the World) Room 2	15:00 - 16:00	Joint Keynote 3: Prof. Fahim Kawsar Main Conference Room		
17:00 - 17:30	Demo/Poster Preparation Main Conference Room	16:00 - 16:30	Social Program Guidance Main Conference Room		
17:30 - 20:30	Reception, Demo/Poster Main Conference Room	16:30 - 20:30	Social Program & Banquet		

IEEE RTCSA Message from the Program Chairs

It is our pleasure to welcome you to the 24th IEEE International Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA 2018), held in Hakodate, Japan. The conference brings together researchers and developers from academia and industry for advancing the technology of embedded and real-time systems and their emerging applications, including the Internet of Things (IoT) and Cyber-Physical Systems (CPS).

The scope of RTCSA includes both research and industry papers that describe research or technical aspects in the area of embedded and real-time systems, divided in three technical tracks: (1) Real-Time Systems; (2) Embedded Systems; and (3) IoT, CPS and Emerging Applications. Authors were allowed to submit manuscripts in either full or short paper format.

Overall, this year we received 48 submissions from around the world. The total number of reviews was 161, with each submission being reviewed by at least three Program Committee members. After a thorough online discussion, the Program Committee selected 15 full papers for publication (equating to an acceptance ratio of 31%), and well as 11 short papers. All accepted papers are organized into seven technical sessions, and included in these proceedings. A subset of the accepted papers were recognized as outstanding; these papers form the shortlist for Best Paper and Best Student Paper awards. We would like to extend our appreciation to all members of the Program Committee, as well as to the 24 secondary reviewers who assisted them, for their outstanding efforts in both reviewing and discussing submissions to produce an excellent program.

This year's RTCSA features a Demo and Poster session. The 2-pages contributions presented in this session have been evaluated by a separate committee chaired by Kazuya Murao. The accepted poster/demo papers are also included in these proceedings. Finally, we are honoured to have three world-renowned researchers: Prof. Onur Mutlu, Prof. Hideyuki Tokuda, and Dr. Fahim Kawsar, to deliver the keynote speeches at the conference.

Our thanks go to the many people who helped organizing this year's conference, including all members of the Organizing Committee, the Steering Committee, and our sponsors; without their efforts, the conference would not have been possible. A special appreciation goes to the RTCSA Steering Committee Chair, Tarek Abdelzaher, and to the General Co-Chairs, Jin Nakazawa and Rob Davis, for their guidance throughout the entire conference organization process. We would also like to thank the Publication Chair, Tadashi Okoshi, for helping us creating these proceedings. Thank you all!

Finally, we would like to thank all authors who submitted their work to RTCSA 2018, whether it was accepted or not; it takes a significant effort to produce the high-quality papers we received this year. We are confident that you will appreciate the excellent papers and lively discussion with leading researchers at the conference.

Welcome to Hakodate!



Rodolfo Pellizzoni

Program Co-Chair
University of Waterloo



Insik Shin

Program Co-Chair
KAIST



Kaori Fujinami

Program Co-Chair
Tokyo University of Agriculture and Technology

IEEE NVMSA Message from the Chairs

Welcome to Hakodate, Japan and the 7th IEEE Non-Volatile Memory Systems and Applications Symposium (NVMSA 2018). NVMSA is a technical conference sponsored by IEEE. The objective of the conference is to bring together academic researchers and industry practitioners for intensive discussion of recent advancing in the field of non-volatile memory (NVM) technologies.

This year, we received a record high number of 37 submissions ranging from device and circuit design, architecture, system software to applications. The submissions came from the United States, China, Japan, South Korea, Taiwan, France, India, Malaysia and other countries all over the world, which indicates that our technical program this year will be very strong and influential. The acceptance rate is 32% for the long presentation papers and 46% including the short presentation papers. Besides the regular sessions, NVMSA 2018 has two invited sessions titled "ImPACT Special Session" (organized by Prof. Masashi Sahashi) and "The Top of the World". In collaboration with RTCSA 2018, we are honored to welcome Prof. Onur Mutlu (Professor of ETH Zurich), Dr. Fahim Kawsar (Research Director of Nokia Bell Labs) and Prof. Hideyuki Tokuda (Presedent of NICT and Professor Emeritus of Keio University) to give keynote speeches.

We would like to thank all the authors for their contributions and their participation to the conference. We also thank the Program Committee members for their professional evaluation on all the submissions. We would like to express our special thanks to the NVMSA Steering Committee, especially to Prof. Yiran Chen, Prof. Tei-Wei Kuo and Prof. Hiroshi Nakamura for their guidance throughout the entire conference organizing process. Without their efforts, the conference and this volume would not be possible.



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IEEE RTCSA & IEEE NVMSA Joint Keynotes

Rethinking Memory System Design (for Data-Intensive Computing)

Prof. Onur Mutlu (ETH Zurich)

9:00 – 10:30, Aug. 29 @ Main Conference Room

The memory system is a fundamental performance and energy bottleneck in almost all computing systems. Recent system design, application, and technology trends that require more capacity, bandwidth, efficiency, and predictability out of the memory system make it an even more important system bottleneck. At the same time, DRAM and flash technologies are experiencing difficult technology scaling challenges that make the maintenance and enhancement of their capacity, energy efficiency, performance, and reliability significantly more costly with conventional techniques. In fact, recent reliability issues with DRAM, such as the RowHammer problem, are already threatening system security and predictability. We are at the challenging intersection where issues in memory reliability and performance are tightly coupled with not only system cost and energy efficiency but also system security.



In this talk, we first discuss major challenges facing modern memory systems (and the computing platforms we currently design around the memory system) in the presence of greatly increasing demand for data and its fast analysis. We then examine some promising research and design directions to overcome these challenges. We will touch on several key topics: 1) novel issues in memory reliability and security and how to enable fundamentally secure, reliable, safe architectures, 2) reducing memory latency and energy consumption by tackling the fixed-latency/energy mindset, 3) enabling data-centric and hence fundamentally energy-efficient architectures that are capable of performing computation near data, 4) enabling emerging non-volatile memory (NVM) technologies via hybrid and persistent memory systems. If time permits, we will also discuss research challenges and opportunities in NAND flash memories.

Shaping the Future Society by IoT and AI ~ Evolution of ICT and its "light" and "shadow" ~

Prof. Hideyuki Tokuda (NICT / Keio University)

11:00 – 12:00, Aug. 30 @ Main Conference Room



The evolution of IoT (Internet of Things) and AI is accelerating. Smart devices, sensors, and actuators create smart IoT devices and connected services in transportation, manufacturing, energy, environment, disaster prevention/mitigation, safety, healthcare and so on. In addition, various digital optimization and automation are deployed by visualization and analysis of big data collected by IoT. Many predictive apps are also initiated by AI.

While we are expanding these "connected merits", cyberattacks targeting familiar IoT devices are also rapidly increasing, and the "connected risks" are diversifying. Furthermore, the ethical, legal and social implications by introducing AI are concerned.

In this talk, we first introduce the research and development activities of NICT and various IoT and AI services in use. We then discuss the current status of cyberattacks targeting IoT devices and the capacity building of Cybersecurity specialists in Japan. We summarize with the issues in shaping future society with IoT and AI.

IEEE RTCSA & IEEE NVMSA Joint Keynotes

Computational Behavior Modelling for the Internet of Things

Prof. Fahim Kawsar (Nokia Bell Laboratories)

15:00 – 16:00, Aug. 30 @ Main Conference Room

The Internet of Things is upon us, and we are observing a monumental effort from the industry and academia to make everything connected. Naturally, to design computational experiences in this uber-connected world, we need a better understanding of people-to-people, people-to-place, people-to-thing interactions. This behavioural understanding would help us to create digital services and capabilities that fundamentally change the way we experience our lives. In this talk, I will explore the system and algorithmic challenges in modelling human behaviour in this new connected era. I will discuss how mobile and wearable devices together with the wireless network can be used as a multi-sensory computational platform to learn and infer human behaviour and to design user-centred connected services across Smart Built Environment and Quantified Lifestyle.



IEEE RTCSA 2018 Technical Program

Session 1: Embedded Deep Neural Networks

10:30 – 11:00, August 29 @ Room 1

“DeepCounter: Using Deep Learning to Count Garbage Bags”

Kazuhiro Mikami, Yin Chen, Jin Nakazawa, Yasuhiro Iida, Yasunari Kishimoto, Yu Oya

“DeepPicar: A Low-cost Deep Neural Network-based Autonomous Car”

Michael Bechtel, Elise McElhiney, Minje Kim, Heechul Yun

“A Case Study of Cyber-Physical System Design: Autonomous Pick-and-Place Robot”

Pei-Chi Huang, Aloysius K. Mok

Session 2: Operating Systems

13:30 – 15:00, August 29 @ Room 1

“Write-aware Data Allocation on Heterogeneous Memory Architecture with Minimum Cost”

Yanbo Zhou, Shouzhen Gu, Lixia Zheng, Edwin H.-M. Sha, Qingfeng Zhuge

“Retention-Time Relaxation Scheme for MLC Flash-Memory Storage Systems”

David Kuang-Hui Yu, Jen-Wei Hsieh

“ROSCH:Real-Time Scheduling Framework for ROS”

Yukihiro Saito, Futoshi Sato, Takuya Azumi, Shinpei Kato, Nobuhiko Nishio

“TZDKS: A New TrustZone-based Dual-Criticality System with Balanced Performance”

Pan Dong, Alan Burns, Zhe Jiang, Xiangke Liao

Session 3: Wireless and IoT

15:30 – 16:45, August 29 @ Room 1

“AirTight: A Resilient Wireless Communication Protocol for Mixed-Criticality Systems”

Alan Burns, James Harbin, Leandro Indrusiak, Iain Bate, Robert Davis, David Griffin

“Parameterized Data Reduction Framework for IoT Devices”

Jyunjhe Chou, Chi-Sheng Daniel Shih

“An Adaptive Computation Framework of Distributed Deep Learning Models for Internet-of-Things Applications”

Mu-Hsuan Cheng, Qihui Sun, Chia-Heng Tu

Session 4: Support for Predictability

9:00 – 10:30, August 30 @ Room 1

“EMPRESS: an Efficient and effective Method for PREdictable Stack Sharing”

Sebastian Altmeyer, Reinder Bril, Paolo Gai

“Phase-Base Profiling and Performance Prediction with Timing Approximate Simulators”

Chih-Wei Yeh, Chia-Heng Tu, Yi-Chuan Liang, Shih-Hao Hung

“Mixed-criticality Scheduling with Dynamic Memory Bandwidth Regulation”

Muhammad Ali Awan, Konstantinos Bletsas, Pedro F. Souto, Benny Akesson, Eduardo Tovar

“Energy characterization of real-time partitioned systems”

Ana Guasque, Patricia Balbastre, Alfons Crespo, Gerhard Fohler

IEEE RTCSA 2018 Technical Program

Session 5: Networking

13:00 – 14:30, August 30 @ Room 1

“Supporting Dynamic Voltage and Frequency Scaling in Networks-On-Chip for Hard Real-Time Systems”

Adam Kostrzewa, Thawra Kadeed, Borislav Nikolic, Rolf Ernst

“Exploring Practical Limitations of Joint Routing and Scheduling for TSN with ILP”

Jonathan Falk, Frank Duerr, Kurt Rothermel

“Schedule Reparability: Enhancing Time-Triggered Network Recovery upon Link Failures”

Francisco Pozo, Guillermo Rodriguez-Navas, Hans Hansson

“Energy characterization of real-time partitioned systems”

Ana Guasque, Patricia Balbastre, Alfons Crespo, Gerhard Fohler

Session 6: Scheduling

9:00 – 10:30, August 31 @ Room 1

“Schedulability Analysis and Priority Assignment for Segmented Self-Suspending Tasks”

Lea Schönberger, Wen-Hung Huang, Georg von der Brüggen, Kuan-Hsun Chen, Jian-Jia Chen

“Analysis of Deadline Miss Rates for Uniprocessor Fixed-Priority Scheduling”

Kuan-Hsun Chen, Georg von der Brüggen, Jian-Jia Chen

“Predictability in Mixed-Criticality Systems”

Rany Kahil, Peter Poplavko, Dario Socci, Saddek Bensalem

“Refining Task Specifications using Model Checking”

Anand Yeolekar, Ravindra Metta, Venkatesh R, Samarjit Chakraborty

Session 7: Cyber Physical Systems

11:00 – 12:30, August 31 @ Room 1

“Scheduling Real-time HiL Co-simulation of Cyber-Physical Systems on Multi-core Architectures”

Salah Eddine Saidi, Nicolas Pernet, Yves Sorel

“Damaged lane markings detection method with label propagation”

Tetsuo Nukita, Yasunari Kishimoto, Yasuhiro Iida, Makoto Kawano, Takuro Yonezawa, Jin Nakazawa

“Exploring Augmented Reality Interaction for Everyday Multipurpose Wearable Robots”

Jaryd Urbani, Mohammed Al-Sada, Thomas Höglund, Tatsuo Nakajima

“uavEE: A Modular, Power-Aware Emulation Environment for Rapid Prototyping and Testing of UAV”

Mirco Theile, Or Dantsker, Richard Nai, Marco Caccamo

“Hierarchical Attention-Based Anomaly Detection Model for Embedded Operating Systems”

Mellitus Ezeme, Qusay Mahmoud, Akramul Azim

IEEE RTCSA 2018 Technical Program

Demo/Poster Session

17:30 – 20:30, August 29 @ Main Conference Room

“Improving Security for Time-Triggered Real-Time Systems with Task Replication”

Kristin Krüger, Gerhard Fohler, Marcus Völp, Paulo Verissimo

“Measurement of cache-related preemption delay for spacecraft computers”

Cheol Hea Koo, Hyungshin Kim

“OpenCL Runtime for OS-driven Task Pipelining on Heterogeneous Accelerators”

Atsushi Koshiba, Ryuichi Sakamoto, Mitaro Namiki

“Practical challenges for FSLM”

S.Muthu N. Balasubramanian, Sara Afshar, Paolo Gai, Moris Behnam, Reinder J. Bril

“CPS-MT: A Real-Time Cyber-Physical System Monitoring Tool for Security Research”

Martín Barrère, Chris Hankin, Angelo Barboni, Giulio Zizzo, Francesca Boem, Sergio Maffei, Thomas Parisini

“Psychological Effects on Positional Relationships Between a Person and a Human-Following Robot”

Keita Maehara, Kaori Fujinami

“Reduction of Communication Cost for Edge-Heavy Sensor Using Divided CNN”

Yoshihiro Ikeda, Yutaka Yanagisawa, Yasue Kishino, Shin Mizutani, Yoshinari Shirai, Takayuki Suyama, Kohei Matsumura, Haruo Noma

“Dynamic Binding a Proper DDS Implementation for Optimizing Inter-node Communication in ROS2”

Ren Morita, Katsuya Matsubara

“A Path-planning Algorithm for UAV Position-estimation Systems at Disaster Sites”

Yusuke Tatsumi, Hiroki Kawanaka, Takahiro Koita

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IEEE NVMSA 2018 Technical Program

Session 1: Best Paper Candidates

11:00 – 12:30, August 29 @ Room 2

“μSnap: Embracing Traditional Programming Models for Persistent Memory through OS Support”

J. Hyun Kim, Young Je Moon, Hyunsub Song, Jay H. Park, Sam H. Noh

“A Comparative Study on Racetrack Memories: Domain Wall vs Skyrmion”

Wang Kang, Xing Chen, Daoqian Zhu, Xichao Zhang, Yan Zhou, Keni Qiu, Younguang Zhang, Weisheng Zhao

“Tiler: An Autonomous Region-Based Scheme with Fast Cleaning for SMR Storage”

Jihe Wang, Chenlin Ma, Zhaoyan Shen, Shahher Muhammad, Zili Shao

Session 2: Invited Talks I (ImpACT Special Session)

13:30 – 15:00, August 29 @ Room 2

“Challenge to the Creation of the Cutting-Edge Spintronics Seeds Innovation and Social Change Through it”

Masashi Sahashi, Hiroaki Yoda, Shinobu Fujita

“Novel Systems and Applications with a next generation MRAM, Voltage Control Spintronics Memory”

Shinobu Fujita, Susumu Takeda, Satoshi Takaya, Kazutaka Ikegami, Naoharu Shimomura, Hiroaki Yoda, Atsushi Kurobe

“An Overview of STT-MRAM and CMOS/MTJ Hybrid NV-Logic such as NV-MPU/MCU”

Tetsuo Endoh, Takahiro Hanyu, Hideo Sato, Shoji Ikeda, Hiroki Koike, Masanori Natsui, Hideo Ohno

“Impact of an MTJ-based logic LSI and its possibility”

Takahiro Hanyu, Tetsuo Endoh, Daisuke Suzuki, Masanori Natsui, Hideo Ohno

Session 3: Invited Talks II (Top of the World)

15:30 – 17:00, August 29 @ Room 2

“Reducing Write Amplification of Flash Storage through Cooperative Data Management with NVM”

Presenter: Eunji Lee (Chungbuk National University)

Originally published in ACM Transactions on Storage, Vol. 13, Issue 2

“RC-NVM: Enabling Symmetric Row and Column Memory Accesses for In-memory Databases”

Presenter: Guangyu Sun (Peking University)

Originally published in HPCA'18

“Endurable Transient Inconsistency in Byte-Addressable Persistent B+-Tree”

Presenter: Wook-Hee Kim (UNIST)

Originally published in FAST'18

Session 4: I/O and Caches

9:00 – 10:30, August 30 @ Room 2

“Applying Recursive Temporal Blocking for Stencil Computations to Deeper Memory Hierarchy”

Toshio Endo

IEEE NVMSA 2018 Technical Program

“Improving I/O performance of Large-Page Flash Storage Systems Using Subpage-Parallel Reads”

Jisung Park, Myungsuk Kim, Sungjin Lee, Jihong Kim

“F2FS Aware Mapping Cache Design on Solid State Drives”

Congming Gao, Yejia Di, Aosong Deng, Duo Liu, Cheng Ji, Chun Jason Xue, Liang Shi

Session 5: Short Presentations

13:00 – 14:40, August 30 @ Room 2

“NVCL: Exploiting NVRAM in Cache-Line Granularity Differential Logging”

Mingzhe Zhang, Xin Yao, Cho-Li Wang

“An Efficient File System for Hybrid In-Memory NVM and Block Devices”

Yuansong Zeng, Edwin H.-M. Sha, Qingfeng Zhuge, Xianzhang Chen, Zhulin Ma, Lin Wu

“MONTRES-NVM: An External Sorting Algorithm for Hybrid Memory”

Mohammed Beyahmedkhernache, Arezki Laga, Jalil Boukhobza

“Modeling of Current Conduction During RESET Phase of Pt/Ta₂O₅/TaO_x/Pt Bipolar Resistive RAM Device”

Arya Lekshmi Jagath, Nandha Kumar T., Haider A F Almurib

“Empirical Study of Transactional Management for Persistent Memory”

Hongping Shu, Hongyu Chen, Hao Liu, Youyou Lu, Qingda Hu, Jiwu Shu

Session 6: NVM Storage

9:00 – 10:30, August 31 @ Room 2

“A Stride-away Programming Scheme to Resolve Crash Recoverability and Data Readability Issues of Multi-level-cell Flash Memory”

Chien-Chung Ho, Yung-Chun Li, Ping-Hsien Lin, Wei-Chen Wang, Yuan-Hao Chang

“On Harmonizing Data Lifetime and Block Retention Time for Flash Devices”

Yi-Ling Lin, Ming-Chang Yang, Yuan-Hao Chang, Che-Wei Chang, Shuo-Han Chen

“MONTRES-NVM: An External Sorting Algorithm for Hybrid Memory”

Satoshi Imamura, Eiji Yoshida

Session 7: Novel Devices

11:00 – 12:30, August 31 @ Room 2

“Designing Data Structures to Minimize Bit Flips on NVM”

Daniel Bittman, Matthew Gray, Justin Raizes, Sinjoni Mukhopadhyay, Matt Bryson, Peter Alvaro, Darrell Long, Ethan Miller

“Energy Efficient Write Verify and Retry Scheme for MTJ based Flip-flop and Application”

Kimiyoshi Usami, Junya Akaike, Sosuke Akiba, Masaru Kudo, Hideharu Amano, Takeharu Ikezoe, Keizo Hiraga, Yusuke Shuto, Kojiro Yagami

“Statistical Memristor-Based Temperature Sensors without Analog-to-Digital Conversion”

The-Nghia Nguyen, Donghwa Shin

IEEE NVMSA 2018 Technical Program

Demo/Poster Session

17:30 – 20:30, August 29 @ Main Conference Room

“Effect of Schottky Interfaces in Yttria-based Memristive Devices”

Mangal Das, Amitesh Kumar, Sanjay Kumar, Biswajit Mandal, Shaibal Mukherjee

“V-PIM: An Analytical Overhead Model for Processing-in-memory Architectures”

Peichen Xie, Guangyu Sun, Feng Wang, Guojie Luo

“Quantitative Analysis of File System Performance on NVM”

Gunhee Choi, Seungboo Kim, Jongmoo Choi

“Embedded DBMS Design for In-Vehicle Information Management”

Joontaek Oh, Youjip Won

“Multifilamentary Conduction Modelling of Bipolar Ta₂O₅/TaO_x Bi-layered RRAM”

Hock Leong Chee, T. Nandha Kumar, Haider Abbas Almurib

“Quantum Conductance in ZnO based DIBS Fabricated Memristive RRAM”

Amitesh Kumar, Mangal Das, Ritesh Bhardwaj, Sanjay Kuma, Biswajit Mandal, Shaibal Mukherjee, Abhinav Kranti

“NVLH: Crash-consistent Linear Hashing for Non-Volatile Memory”

Hu Wan, Fuyang Li, Zimeng Zhou, Kaisheng Zeng, Jianhua Li, Chun Jason Xue

“Towards Model Checking Library for Persistent Data Structures”

Hiroyuki Iiboshi, Tomoharu Ugawa

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Time	Aug. 28
10:30 - 11:50	Session 1 Room 1
11:50 - 13:00	Lunch
13:00 - 13:45	Keynote Session 1: Prof. Takaya Yamazato Room 1
13:50 - 15:10	Session 2 Room 1
15:10 - 15:30	Break
15:30 - 16:15	Keynote Session 2: Prof. Polly Huang Room 1
16:20 - 17:40	Session 3 Room 1
18:15 - 20:15	Workshop Banquet

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Session 1

10:30 – 11:50, August 28 @ Room 1

“Human Activity Recognition by Infrared Sensor Arrays Considering Positional Relation between User and Sensors”

Kazuki Kobayashi, Kentaroh Toyoda, Tomoaki Ohtsuki

“Ultrasound Relative Positioning for IoT Devices in Dense Wireless Spaces”

Marat Zhanikeev

“Performance Evaluation of Digital Signage and Image-Sensor-Based Visible Light Communication Systems Using Motion Video as Visual Information”

Shota Yoshida, Hiraku Okada, Tadahiro Wada, Kentaro Kobayashi, Masaaki Katayama

“Adaptive Reconfiguration of Large Display Content Geometry and Layout Based on Passengers' Position”

Ken Nagao, Kwan-Liu Ma, Issei Fujishiro

Keynote Session 1

13:00 – 13:45, August 28 @ Room 1



“Vehicle-to-Everything (V2X) Communications”

Prof. Takaya Yamazato

Nagoya University, Japan

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Session 2

13:50 – 15:10, August 28 @ Room 1

“An Efficient Code Dissemination Tree Construction Algorithm using Data Collection Tree in WSNs”

Hiromu Asahina, Kentaroh Toyoda, Iwao Sasase, Panagiotis Takis Mathiopoulos, Hisao Yamamoto

“Heterogeneous Wireless Sensor Networks for Underwater Biogeocenosis Monitoring”

Takahiro Fujiwara, Shinsuke Konno, Hitoshi Gotoh, Hiroyuki Kawai, Kazushi Miyashita, Takao Moriya

“Dynamic Sleep Control Using Network Connectivity in Wireless Sensor Networks”

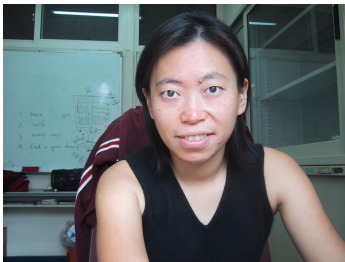
Shigeki Shiokawa

“Efficient Data Transmission Method by Short Range Communications with Mobile Terminals”

Yusuke Ishibayashi, Shinji Sugawara

Keynote Session 2

15:30 – 16:15, August 28 @ Room 1



“YuShanMAC: Realizing Fine-Grained Time Synchronization and TDMA-fashioned MAC for Mission-Critical DTSNs”

Prof. Polly Huang

National Taiwan University, Taiwan

Session 3

16:20 – 17:40, August 28 @ Room 1

“Optimal energy management for HVAC via MPC”

Takatoshi Suda, Yuuki Ogata, Toru Namerikawa

“Implementation of Hardware for Accelerating Anonymization Transparent to the Network”

Soichiro Shohata, Yuichi Nakamura, Hiroaki Nishi

“A Self-Organizing Map Using Classification Method for Services on Multi-Layer Computing Environments

Tomomu Iwai, Yuta Ohno, Akira Niwa, Yuichi Nakamura, Hiroaki Nishi

“Object Orientation Stabilization during Pushing Task by Multiple Mobile Robots using Force Control”

Charlotte Quinrand, Toshiyuki Murakami

1F

Registration Desk

Elevator

Room 1

Room 2

控室 A
控室 B
役員 役員室
更衣室
更衣室
トイレ
ホール
男子 更衣室
男子 更衣室
女子 更衣室
化粧室
キッズ ルーム
トイレ

3F

The diagram shows the 3rd floor layout with labels for 'エレベーター' (Elevator), 'EV' (Event Venue), '観客席' (Audience Seats), and 'ランニング走路' (Running Track). A large red 'X' is superimposed over the entire floor plan.

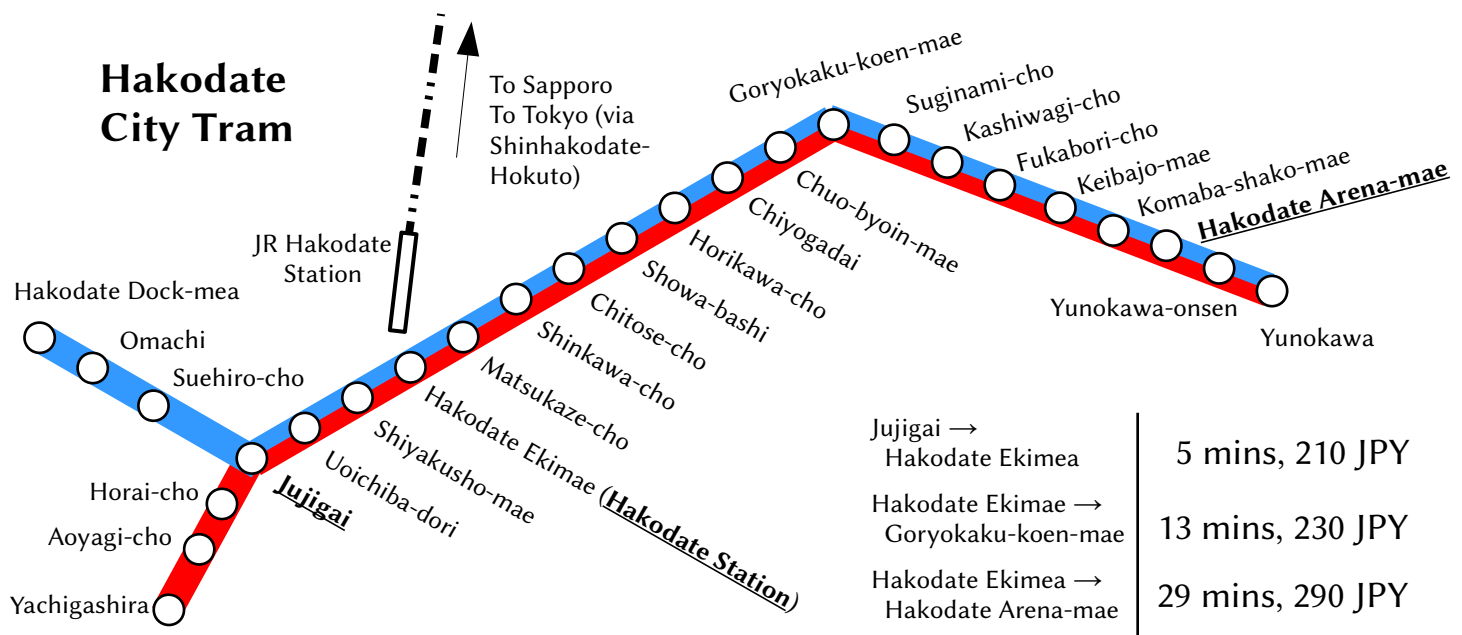
Restroom
(Men)Restroom
(Women)

EV

EV Elevator



Stairs



Banquet

Gotoken

4-5 Suehirocho, Hakodate,
Hokkaido, Japan 040-0053
(4 mins walk from the Jujigai
tram station)



Editor's Choice 1: Mount Hakodate

The mountain is renowned for its view of the surrounding bay and city. The Michelin Green Guide: Japan gave the experience 3/3 stars in a review, placing it as equal to mountain views of Naples and Hong Kong. The peak is accessible by hiking or by bike, as well as by a regular cable car service.

description cited from https://en.wikipedia.org/wiki/Mount_Hakodate



Editor's Choice 2: Koryu-ji Temple

Koryu-ji is the oldest Buddhism temple in Hakodate city and is recognized as a registered tangible cultural property. The temple is accessible by a tram with the Hakodate Dock-mae station, which is a 12 mins ride from the Hakodate station.

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**Some seek complex solutions to simple problems;
it is better to find simple solutions to complex problems**