

The 21st International Conference on Intelligent Software Methodologies, Tools and Techniques

(SOMET 2022)

Kitakyushu, Japan, Sept. 20-22, 2022

Conference Program

<https://www.somet2022.com/>

NOTE

Due to the influence of COVID-19, most of speakers will use Zoom from a remote location (not in Japan). It doesn't matter which one you participate in if you wish.

All authors (speakers) from Japan must attend and participate in the conference in person, to present their work. If they cannot attend they must send a signed letter stating the reason of their failure to attend, the conferences may not provide participation certificate for those who live in Japan and do not attend without a formal reason.

Time of all presentation is 25 minutes for a general paper (#ID) and 15 minutes for a short paper (S#ID), respectively, and + 5 minutes for questions in each presentation.

All times indicate Japan standard time (JST). If you attend a web conference in your place (not in Japan), please convert to your local time.

September 20th, Tuesday

Japan standard time (JST) AM 9:00-9:30 REGISTRATION

< Room A >

9:30-10:00 Opening

General Chair: Prof. Hamido Fujita, Program Chairs: Dr. Yutaka Wantanobe, Dr. Takuya Azumi

Organizing Chairs: Dr. Jun Sasaki, Dr. Mohamed Hamada

10:00-12:00 **Software System with Intelligent Design**

Session Chair: Masaki Kurematsu

#17	Self-driving Software Benchmark for Model-based Development	<i>Takumi Onozawa (Saitama University)*; Takuya Azumi (Saitama University)</i>
#28	Web based Interactive Bus Route Search System with Open-Source Software and Open data	<i>Wanming Chu (The University of Aizu)*</i>
#33	Communication Overhead Schema Independent of Libraries for Software/Hardware Interface	<i>Yutaro Kobayashi (Saitama University)*; Hiroshi Fujimoto (Technology Headquarters, eSOL Co., Ltd); Takuya Azumi (Saitama University)</i>
#34	An integer wavelet transform based lossless image compression technique using Arithmetic coding	<i>Md. Atiqur Rahman (Daffodil International University)*; Mohamed Hamada (The University of Aizu)</i>

12:00-14:00 LUNCH BREAK

14:00-15:30 Software System with Intelligent Design, Machine learning in Systems Software

Session Chair: Takuya Azumi

#60	Visual Query Interface based on Procedural Visual Language	<i>Tomonori Suzuki (The University of Aizu)*; Yutaka Watanobe (The University of Aizu); Divij G Singh (University of Aizu)</i>
#13	LibForce: C++ Library for Reinforcement Learning	<i>Yukikazu Nakamoto (University of Hyogo)*</i>
#25	TRCA: Text Restoration for Chinese ASR with BERT	<i>Xing Wu (Shanghai University)*; Yuan Zhang (Shanghai University)</i>

15:30-16:00 COFFEE BREAK

16:00-17:00 Keynote I:

Session Chair: Hamido Fujita

“On Fuzzy and Linguistic Decision-Making: Scenarios and Challenges”

By Prof. Dr. Enrique Herrera Viedma

17:00-19:00 Software System with Intelligent Design

Session Chair: Francisco Javier Cabrerizo

#36	A Web Group Decision Support System Based on Granular Computing	<i>Francisco Javier Cabrerizo (University of Granada)*; Juan Carlos González-Quesada (University of Granada); Ignacio Javier Pérez (University of Granada); Manuel Jesús Cobo (University of Granada); Enrique Herrera-Viedma (University of Granada)</i>
#53	Evaluating Style-Similarity in Extractive Summarization Techniques	<i>Svea Klaus (University of Granada)*; Juan Bernabé Moreno (E.ON Digital Technology GmbH); Enrique Herrera-Viedma (University of Granada)</i>
#62	Effectiveness of robot motion block on A-star algorithm for robotic path planning	<i>Raihan Kabir (Department of Computer Science and Engineering, University of Aizu)*; Yutaka Watanobe (The University of Aizu); Keitaro Naruse (University of Aizu); Dr. Md. Rashedul Islam (University of Asia Pacific)</i>

#72	Efficiency of REST and gRPC realizing communication tasks in microservice-based ecosystems	<i>Marek Bolanowski (Rzeszow University of Technology)*; Kamil Zak (Rzeszow University of Technology); Andrzej Paszkiewicz (Rzeszow University of Technology); Maria Ganzha (Systems Research Institute, Polish Academy of Sciences); Marcin Paprzycki (Systems Research Institute, Polish Academy of Sciences); Piotr Sowiński (Systems Research Institute, Polish Academy of Sciences); Ignacio Lacalle (UPV); Carlos Palau (Technical University of Madrid)</i>
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< Room B >

AM10:00-12:00 **Software Systems Security and techniques**

Session Chair: Yutaka Watanobe

#30	Supporting Digital rights and Copyright in Online eBook Stores using Blockchain	<i>Rashmi P Sarode (University of Aizu)*; Subhash Bhalla (University of Aizu)</i>
#41	Malicious URL Detection with Distributed Representation and Deep Learning	<i>Nguyet Quang Do (Universiti Teknologi Malaysia)*; Ali Selamat (Universiti Teknologi Malaysia); Kok Cheng Lim (Universiti Tenaga Nasional); Ondrej Krejcar (University of Hradec Kralove)</i>
#50	Anti-Obfuscation Techniques: Recent Analysis of Malware Detection	<i>NOR ZAKIAH BINTI GORMENT (Universiti Teknologi Malaysia)*; Ali Selamat (Universiti Teknologi Malaysia); Ondrej Krejcar (University of Hradec Kralove)</i>
#68	Watchtower Selection in Off-Blockchain PCN Using Peterson Leader-Election Algorithm	<i>MD FAIZUL IBNE AMIN (The University of Aizu)*; Yutaka Watanobe (The University of Aizu); Md. Mostafizer Rahman (The University of Aizu); Raihan Kabir (Department of Computer Science and Engineering, University of Aizu)</i>

12:00-14:00 LUNCH BREAK

14:00-15:30 **Knowledge Science and Intelligent Computing**

Session Chair: Shelly Sachdeva

#45	Intrusion Detection with Big Data Analysis in SDN-enabled Networks	<i>Hien Do Thi Thu (University of Information Technology, VNU-HCM)*; Ba Truc Le (University of Information Technology, VNU-HCM); The Duy Phan (University of Information Technology); Thi Huong Lan Do (University of Information Technology, VNU-HCM); Hien Do Hoang (University of Information Technology, VNU-HCM); Van-Hau Pham (University of Information Technology, VNU-HCM)</i>
S#44	Learning Exercises Recommendation for Online Judge System Based on Deep Knowledge Tracking	<i>Kaiyu Dai (Fudan University)*; Xiaorui Zuo (Fudan University); Fan Liu (Fudan University); Rui Zhang (Fudan University)</i>
S#46	Database Migration Tools: From RDB to NoSQL Database	<i>Neha Bansal (National Institute of Technology)*; Shelly Sachdeva (NIT Delhi)</i>

15:30-16:00 COFFEE BREAK

16:00-17:00 Keynote Speech I (Room A)

17:00-19:00 Formal Techniques for System Software and Quality assessment, Software Systems Security and techniques, Ontology in data and software

Session Chair: Stan Jarzabek

#16	Are Workflows a Language to Solve Software Management Challenges? — A β MACH Based Analysis	Marcus Hilbrich (Humboldt-Universität zu Berlin)*; Vasilis Bountris (Humboldt-Universität zu Berlin)
#20	Prioritizing Defects for Debugging With Requirement-to-Test-Case Mappings	Stan Jarzabek (Technical University of Bialystok); Cezary Boldak (Bialystok University of Technology)*
#76	Maximizing Information Flow Path Coverage in Cyber-Physical Systems using Metaheuristic Optimization	Stefan Gries (University of Duisburg-Essen)*; Volker Gruhn (University of Duisburg-Essen)
#18	Towards Normalized Systems from RDF with SPARQL	Marek Suchánek (Czech Technical University in Prague)*; Herwig Mannaert (University of Antwerp); Robert Pergl (Czech Technical University in Prague)

< Room C >

AM 10:00-11:30 Cyber-Physical System

Session Chair: Keita Nakamura

#22	Fracture Animation Procedure using Crack Patterns Generated by L-system	Yohei Nishidate (University of Aizu)*
#56	Verification for 3D reconstruction of stairs using artificial image data	Keita Nakamura (The University of Aizu)*; Keita Baba (The University of Aizu); Takuma Yoshikawa (The University of Aizu); Toshihide Hanari (Collaborative Laboratories for Advanced Decommissioning Science, Japan Atomic Energy Agency); Kuniaki Kawabata (Collaborative Laboratories for Advanced Decommissioning Science, Japan Atomic Energy Agency)
#58	Evaluation of 3D Point-Cloud Reconstruction Using Overlapped Frames in Fragment Construction	Yuta Shintomi (University of Aizu)*; Yuichi Okuyama (University of Aizu); Yohei Shimmyo (University of Aizu); Satoshi Nishimura (University of Aizu)

11:30-14:00 LUNCH BREAK

16:00-17:00 Keynote Speech I (Room A)

17:00-19:00 Intelligent Decision Support Systems

Session Chair: Guido Guizzi

#11	Evidence-based methods for the development of computationally supported epidemic-combating policies	<i>Mats Danielson (Stockholm University); Love Ekenberg (Stockholm University and IIASA); Nadejda Komendantova (IIASA); Adriana Mihai (University of Bucharest)*</i>
#15	Challenges in Fuzzy Decision Making for Future Research	<i>José Ramón Trillo (University of Granada)*; Enrique Herrera-Viedma (University of Granada); Francisco Javier Cabrerizo (University of Granada); María José Higuera-Ruiz (University of Granada); Sergio Alonso (University of Granada); Juan Antonio Morente-Molinera (University of Granada)</i>
#81	Deep Reinforcement Learning approach for Maintenance Planning in a Flow-Shop Scheduling Problem	<i>Guido Guizzi (Università degli Studi di Napoli Federico II)*; Maria Grazia Marchesano (Università degli Studi di Napoli Federico II)</i>
#82	A deep learning approach for the performance estimation of a stochastic CONWIP flow-shop system	<i>Guido Guizzi (Università degli Studi di Napoli Federico II)*; Silvestro Vespoli (Università degli Studi di Napoli Federico II)</i>

September 21st, Wednesday

Japan standard time (JST) AM. 9:00-9:30 **REGISTRATION**

< Room A >

AM 9:30-11:30 Software Systems Security and techniques, Applied intelligence in Software

Session Chair: Jaouhar Fattahi

#9	SpamDL: a High Performance Deep Learning Spam Detector Using Stanford Global Vectors and Bidirectional Long Short-Term Memory Neural Networks	<i>Jaouhar Fattahi (Université Laval)*; Mohamed Mejri (Laval University); Marwa Ziadia (Laval University); RIDHA RG Ghayoula (Laval University)</i>
#21	Exudates detection based on SSD MobileNet for Referable Diabetic Retinopathy	<i>Zaira Garcia-Nonoal (INSTITUTO POLITECNICO NACIONAL); MARIKO Nakano-Miyatake (INSTITUTO POLITECNICO NACIONAL)*; Hector Perez-Meana (INSTITUTO POLITECNICO NACIONAL); Ana Gonzalez-H.Leon (Princess Margaret Hospital)</i>
#24	Implementation of a CNN-based Driver Drowsiness and Distraction Detector in Mobile Devices	<i>Jonathan Mauricio Flores-Monroy (Instituto Politecnico Nacional); MARIKO Nakano-Miyatake (INSTITUTO POLITECNICO NACIONAL)*; Hector Perez-Meana (INSTITUTO POLITECNICO NACIONAL); Enrique Escamilla-Hernandez (Instituto Politecnico Nacional); Gabriel Sánchez (Instituto Politécnico Nacional)</i>
#49	Twitter Face Image Mining for Recognition of Different Face Mask Types	<i>Ulises Arroyo-Rojas (INSTITUTO POLITECNICO NACIONAL); Miguel Jimenez-Martinez (INSTITUTO POLITECNICO NACIONAL); Gibran Benitez-Garcia (The University of Electro-Communications)*; Jesus Olivares-Mercado (INSTITUTO POLITECNICO NACIONAL); Hiroki Takahashi (the University of Electro-Communications)</i>

11:30-14:00 LUNCH BREAK

14:00-15:30 Applied intelligence in Software

Session Chair: Takuya Azumi

#63	Air Finger Pressing Activity-Based Character Input System on a Virtual Keyboard	Taiki Watanabe (University of Aizu); Md. Al Mehedi Hasan (University of Aizu); Jungpil Shin (The University of Aizu)*
#66	Multi-task Learning-based Attentional Feature Fusion Network for Scene Text Image Super-resolution	Kosuke Honda (Iwate Prefectural University)*; Hamido Fujita (Iwate Prefectural University); Masaki Kurematsu (Iwate Prefectural University)
#74	Prompt Sensitivity of Language Model for Solving Programming Problems	Atsushi Shirafuji (The University of Aizu)*; Takumi Ito (Tohoku University / Langsmith Inc.); Makoto Morishita (NTT); Yuki Nakamura (Tohoku University); Yusuke Oda (LegalForce); Jun Suzuki (Tohoku University / Google); Yutaka Watanobe (The University of Aizu)

15:30-16:00 COFFEE BREAK

16:00-17:00 Keynote II:

Session Chair: Hamido Fujita

**“New School of IT: A new Paradigm for IT Organizations and how it contributes to Engineering Data Driven Systems”
By Prof. Volker Gruhn**

17:20-18:30 Bus Tour (A bus will start at 17:20 from the conference venue)

18:30-20:30 Banquet

< Room B >

AM 9:30-11:30 Knowledge Science and Intelligent Computing

Session Chair: Thanh Binh Nguyen

#31	Drone Detection Using Deep Neural Networks	Thanh Binh Nguyen (University of Science)*; Huy Anh Dinh (University of Science); Hoang Pham (University of Science, Ho Chi Minh City); Phat Van Thai (Nanyang Technological University); Trung Nguyen (Hong Bang International University)
#39	A Lightweight CNN-based Pothole Detection Model for embedded systems using Knowledge Distillation	Aminu Musa (Federal University Dutse)*; Mohammed Hassan (Bayero University Kano); Mohamed Hamada (University of Aizu)
#43	Multi-classification of Imbalance Worm Ransomware in the IoMT system	Shilan S. Hameed (Universiti Teknologi Malaysia)*; Ali Selamat (Universiti Teknologi Malaysia); Liza Abdul Latiff (Universiti Teknologi Malaysia); Shukor Abd Razak (Universiti Teknologi Malaysia); Ondrej Krejcar (University of Hradec Kralove)
S#27	An Attendance Checking System on Mobile Devices Using Transfer Learning	Huynh Thanh-Du, Maciej Huk, Nguyen Hung Dung, and Nguyen Thai-Nghe (Can Tho University)*

AM11:30-14:00 LUNCH BREAK

14:00-15:30 Knowledge Science and Intelligent Computing

Session Chair: Nhon V. Do

#55	Knowledge Representation of Expert System in Real-estate Investment Combining Collected Data	Huy Nguyen (University of Sciences); Hien D. Nguyen (University of Information Technology)*; Nhon Do (Hong Bang International University); Uyen Pham (University of Economics and Law); Di Tran (UEH University); Vuong Pham (Sai Gon University)
#61	An Efficient Insect Pest Classification Using Multiple Convolutional Neural Network Based Models	Thanh Binh Nguyen (University of Science)*; Trung Hieu Ung (University of Science, Ho Chi Minh City); Quang Huy Ung (University of Science, Ho Chi Minh City); Tan Trung Nguyen (Hong Bang International University)
#69	Segmentation on Chest CT Imaging in COVID- 19 based on the improvement Attention U-net model	Nguyen Tran (University of Sciences); Hien D. Nguyen (University of Information Technology)*; Nhan Huynh (Campus in Ho Chi Minh City, University of Transport and Communications); Nha Tran (Campus in Ho Chi Minh City, University of Transport and Communications); Linh Nguyen (University of Idaho)

15:30-16:00 COFFEE BREAK

16:00-17:00 Keynote Speech II (Room A)

17:20-18:30 Bus Tour (A bus will start at 17:20 from the conference venue)

18:30-20:30 Banquet

< Room C >

14:00-15:30 Software Systems Security and techniques, Software System with Intelligent Design

Session Chair: Jun Sasaki

#68	Watchtower Selection in Off-Blockchain PCN Using Peterson Leader-Election Algorithm	MD FAIZUL IBNE AMIN (The University of Aizu)*; Yutaka Watanobe (The University of Aizu); Md. Mostafizer Rahman (The University of Aizu); Raihan Kabir (Department of Computer Science and Engineering, University of Aizu)
#62	Effectiveness of robot motion block on A-star algorithm for robotic path planning	Raihan Kabir (Department of Computer Science and Engineering, University of Aizu)*; Yutaka Watanobe (The University of Aizu); Keitaro Naruse (University of Aizu); Dr. Md. Rashedul Islam (University of Asia Pacific)
#11	Evidence-based methods for the development of computationally supported epidemic-combating policies	Mats Danielson (Stockholm University); Love Ekenberg (Stockholm University and IIASA); Nadejda Komendantova (IIASA); Adriana Mihai (University of Bucharest)*

15:30-16:00 COFFEE BREAK

16:00-17:00 Keynote Speech II (Room A)

17:20-18:30 Bus Tour (A bus will start at 17:20 from the conference venue)

18:30-20:30 Banquet

September 22nd, Thursday

Japan standard time (JST) AM. 9:30-10:00 REGISTRATION

< Room A >

AM10:00-11:30 Formal Techniques for System Software and Quality assessment, Applied intelligence in Software, Ontology in data and software

Session Chair: Yutaka Watanobe

#59	Development of PHITS Plugin for Calculating the Integral Radiation Dose on Robots	Kenta Suzuki (Japan Atomic Energy Agency)*; Kuniaki Kawabata (Japan Atomic Energy Agency)
#26	A Holistic Automated Software Structure Exploration Framework for Testing	Yushi Cao (Nanyang Technological University)*; Yon Shin Teo (Continental Automotive); Yan Zheng (Tianjin University); Yuxuan Toh (Continental Automotive Singapore Pte. Ltd., Singapore); Shang-Wei Lin (Nanyang Technological University)
#19	Bringing Linguistics to a Programming Class: A Problem of Automatic Text Generation for Describing Data Series	Evgeny Pyshkin (University of Aizu)*; John Blake (University of Aizu)

AM11:30-14:00 LUNCH BREAK

14:00-15:30 Software System with Intelligent Design, Applied intelligence in Software

Session Chair: Toshitaka Hayashi

#73	ASSIST-IoT: A Reference Architecture for Next Generation Internet of Things	Marcin Paprzycki (IBSPAN)*; Alejandro Fornés Leal (UPV); Ignacio Lacalle (UPV); Carlos Palau (Technical University of Madrid); Paweł Szymeja (SRIPAS); Maria Ganzha (IBSPAN)
#80	New Methods for Contextual Communication in Modeling Software Platform (MSP)	Horvath Laszlo (Obuda University)*

#52	Image Entropy Equalization for Autoencoder-based One-class classification	Toshitaka Hayashi (University of Hradec Kralove)*; Dalibor Cimr (University of Hradec Kralove); Richard Cimler (University of Hradec Kralove)
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15:30-16:00 Best Paper Award and Closing Ceremony

General Chair: Prof. Hamido Fujita

Program Chair of the SOMET2023: Prof. Guido Guizzi

< Room B >

AM 10:00-11:30 Machine learning in Systems Software

Session Chair: Masaki Kurematsu

S#29	Infected Mosquito Detection System using Spectral Analysis	Marco Antonio Haro-Uresti (INSTITUTO POLITECNICO NACIONAL); MARIKO Nakano-Miyatake (INSTITUTO POLITECNICO NACIONAL)*; Jorge Cime-Castillo (Instituto Nacional de Salud Publica); Humberto Lanz-Mendoza (Instituto Nacional de Salud Pública); Mario Gonzalez-Lee (Universidad Veracruzana); Hector Perez-Meana (INSTITUTO POLITECNICO NACIONAL)
#32	Gossip Swap SGD: Lightweight Decentralized Machine Learning for Non-homogeneous Data Distribution	Naoki Yokota (Tokyo Institute of Technology); Yuko Hara-Azumi (Tokyo Institute of Technology)*
#40	A Study on an Imbalanced Data Processing Method with Maharanobis-Taguchi System	Masaki Kurematsu (Iwate Prefectural University)*

AM11:30-14:00 LUNCH BREAK

14:00-15:30 Cyber-Physical System, Ontology in data and software

Session Chair: Masaki Kurematsu

#78	Business Process Modeling in a Virtual 3D World	Aljoscha Jagenow (Kiel Univ.); Andreas Speck (Kiel Univ.)*; Melanie Windrich (Kiel Univ.); Emre Öksüz (Kiel Univ.); Elke Pulvermüller (Osnabrück University)
#79	Implementation of UI methods and UX in VR in case of 3D printer tutorial	Andrzej Paszkiewicz (Rzeszow University of Technology)*, Mateusz Salach (Rzeszow University of Technology), Maria Ganzha (Systems Research Institute Polish Academy of Sciences), Marcin Paprzycki (Systems Research Institute Polish Academy of Sciences), Marek Bolanowski (Rzeszow University of Technology), Grzegorz Budzik (Rzeszow University of Technology), Hubert Wójcik (Rzeszow University of Technology), Fotios Konstantinidis (Institute of Communication and Computer Systems, Athens, Greece), and Carlos E. Palau (Communications Department, Universitat Politècnica de València)

#57	Ontology Reuse: the Real Test of Ontological Design	<i>Marcin Paprzycki (IBSPAN)*; Maria Ganzha (IBSPAN); Katarzyna Wasielewska-Michniewska (IBSPAN); Piotr Sowinski (IBSPAN)</i>
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15:30-16:00 Best Paper Award and Closing Ceremony (Room A)

< Room C >

14:00-15:30 Knowledge Science and Intelligent Computing, Machine learning in Systems Software

Session Chair: Yutaka Watanobe

#12	A Conceptual Framework of Dynamic Risk Management for Autonomous Vehicles	<i>Anil Ranjitbhai Patel (Technische Universität Kaiserslautern)*; Nikita Bhardwaj Haupt (TU Kaiserslautern); Peter Liggesmeyer (Technische Universität Kaiserslautern)</i>
#14	Knowledge Transfer Patterns to Make Disciplinary Knowledge Explicit — Exemplified by HPC	<i>Marcus Hilbrich (Humboldt-Universität zu Berlin)*</i>
#51	Machine Learning Analytics-based Distributed Frameworks: A Survey	<i>Omar Haddad (MARS)*; Fethi Fkih (MARS); Mohamed Nazih Omri (University of Sousse)</i>

15:30-16:00 Best Paper Award and Closing Ceremony (Room A)