FSDM 2024

The 10th International Conference on
Fuzzy Systems and Data Mining

November 5-8, 2024   Matsue, Japan

Conference Guide

FSDM 2024
CONFERENCE PROGRAM

November 5th-8th, 2024

Matsue, Japan

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Part I Conference Schedule Summary

November 5, 2024 (Tuesday)	
14:00-20:00	**Onsite Registration***
Note: * Please show us your name or paper ID for registration. * Please pick up all the conference materials at the registration desk (Name Card, Conference Program, Lunch & Dinner Tickets etc.). *Onsite registration desk is set in front of Room 501, Kunibiki Messe (Shimane Prefectural Convention Center) Address: 1-2-1 Gakuen Minami Matsue City, Shimane, JAPAN 690-0826	

November 6, 2024 (Wednesday)
Location: Meeting Room 501(Morning Session), Meeting Room 401(Afternoon Session), Kunibiki Messe
Morning Session: Chaired by Prof. Sheng-Lung Peng, National Taipei University of Business, Taiwan

09:00-09:05	**Opening & Welcoming Remarks** *Distinguished Prof. Hamido Fujita,* Iwate Prefectural University, Japan
09:05-09:45	**Keynote Speech 1: Federated Learning for Data Privacy** *Prof. Gautam Srivastava,* Brandon University, Canada
09:45-10:25	**Keynote Speech 2: Correlation Analysis over Big Multidimensional Datasets: A Powerful Paradigm for Next-Generation Big Data Analytics Research – Definitions, Models, Implementations** *Prof. Alfredo Cuzzocrea,* University of Calabria, Italy; University of Paris City, France
10:25-10:55	**Coffee Break & Group Photo**
10:55-11:35	**Keynote Speech 3: Domination-like Problems with Propagation Property** *Prof. Sheng-Lung Peng,* National Taipei University of Business, Taiwan
11:35-11:55	**Invited Speech 1: Challenges of Merging Generative AI with Metaverse for Next-Gen Education** *Prof. Dimiter Velev,* University of National and World Economy, Bulgaria
12:00-12:30	**Poster Session** *Location: Meeting Room 501 Kunibiki Messe*
12:30-14:00	**Lunch Break** *Location: Meeting Room 501 Kunibiki Messe*
14:00-17:35	**Special Session on "Applied Mathematics and Intelligent Algorithms for Modern Industry (AMIAMI)"** *Location: Meeting Room 401 Kunibiki Messe*
18:00-19:00	**Dinner** *Location: Meeting Room 401 Kunibiki Messe*

November 7, 2024 (Thursday)
Location: Meeting Room 401   Kunibiki Messe

09:00-12:00	**Oral Session 1: Data Mining, Machine Learning and Neural Networks**
12:00-13:30	**Lunch Break** *Location: Meeting Room 401 Kunibiki Messe*
13:30-16:55	**Oral Session 2: Interdisciplinary Field of Fuzzy System and Data Mining & Special Sessions on "Application of Generative AI" and "Safeguard AI-based Automotive and Automation Product"**
17:30-20:30	**Awarding Banquet** *Location: YUUSHIEN Garden in Daikonshima*

November 8, 2024 (Friday)	
09:30-15:30	**One Day Tour**

Part II Opening & Welcoming Remarks

Opening & Welcoming Remarks

Distinguished Professor Hamido Fujita, Iwate Prefectural University, Japan; Professor at Malaysia-Japan International Institute of Technology, Universiti Teknologi Malaysia

Biography: Dr. Hamido FUJITA is Distinguished Professor of Iwate Prefectural University, Japan. He is also contracted Professor at Malaysia-Japan International Institute of Technology(MJIIT), Universiti Teknologi Malaysia. He is also Research Professor at University of Granada (Spain), Universiti Teknologi Malaysia, and HUTECH University Vietnam; Expert Excellence Professor at Shanghai University of Medicine & Health Sciences. He is currently the Executive Chairman of i-SOMET Incorporated Association, Japan. He is Highly Cited Researcher in Cross-Field for the year 2019 and 2020, 2021, 2022 in Computer Science field, respectively from Clarivate Analytics. He is Editor-in-Chief of Applied Intelligence (Springer), Editor-in-Chief of Healthcare Management (Tayler&Francis), and Editor-in-Chief of Knowledge-Based Systems (2010-2020) and Emeritus Editor of Knowledge-Based Systems. More details, please refer to his personal homepages via https://www.webofscience.com/wos/author/record/D-6249-2012 and https://scholar.google.com/citations?hl=en&user=MxzV1nQAAAAJ

Part III Keynote Speeches

Keynote Speech 1: Federated Learning for Data Privacy

Prof. Gautam Srivastava,

Department of Mathematics & Computer Science, Brandon University, Brandon, MB, Canada

Biography: Gautam Srivastava was awarded his B.Sc. degree from Briar Cliff University in U.S.A. in the year 2004, followed by his M.Sc. and Ph.D. degrees from the University of Victoria in Victoria, British Columbia, Canada in the years 2006 and 2012, respectively. He then taught for 3 years at the University of Victoria in the Department of Computer Science, where he was regarded as one of the top undergraduate professors in the Computer Science Course Instruction at the University. From there in the year 2014, he joined a tenure-track position at Brandon University in Brandon, Manitoba, Canada, where he currently is active in various professional and scholarly activities. He was promoted to Professor in January 2023. Dr. G, as he is popularly known, is active in research in the field of Data Mining and Big Data. In his 10-year academic career, he has published a total of 400 papers in high-impact conferences in many countries and in high-status journals (SCI, SCIE) and has also delivered invited guest lectures on Big Data, Cloud Computing, Internet of Things, and Cryptography at many international universities. He is an Editor of several international scientific research journals. He currently has active research projects with other academics in Taiwan (China), Singapore, Canada, Czech Republic, Poland and U.S.A. He is constantly looking for collaboration opportunities with foreign professors and students. For more details about Dr. G., please refer to his personal website at (https://people.brandonu.ca/srivastavag/).

Abstract: In recent years, mobile devices can be equipped with increasingly advanced computing capabilities, which opens up countless possibilities for meaningful applications. Traditionally, any cloud-based Machine Learning (ML) approach requires that data be centralized on a cloud-based server/data center. However, this can result in critical issues related to unacceptable latency and communication inefficiency as well as major security and privacy concerns. However, conventional ML technologies still require personal data to be shared. Recently, in light of increasing security and privacy concerns, the concept of Federated Learning (FL) has been introduced. In FL, end devices use their local data to train a local ML model required by the server. In a large, complex mobile edge networks, FL still faces implementation challenges with regard to communicational costs, resource allocation, security, and privacy. In this talk, we begin with an introduction to the background and fundamentals of FL. We then discuss how FL can work to try and preserve privacy while maintaining security of data. Finally, we discuss some open research areas and specific open problems where attendees may be able to make an impact.

Keynote Speech 2: Correlation Analysis over Big Multidimensional Datasets: A Powerful Paradigm for Next-Generation Big Data Analytics Research – Definitions, Models, Implementations

Prof. Alfredo Cuzzocrea,

University of Calabria, Rende, Italy; University of Paris City, Paris, France

Biography: Alfredo Cuzzocrea is Professor of Computer Engineering at the University of Calabria, Rende, Italy. He also covers the role of Excellence Chair in Big Data Management and Analytics at the University of Paris City, Paris, France. He is the Director of the Big Data Engineering and Analytics Lab of the University of Calabria, Rende, Italy. He is also Research Fellow of the National Research Council (CNR), Rome, Italy. His current research interests span the following scientific fields: big data, database systems, data mining, data warehousing, and knowledge discovery. He is author or co-author of more than 750 papers in international conferences (including CIKM, MDM, EDBT, SSDBM, PAKDD, DOLAP), international journals (including TKDE, JCSS, IS, FGCS, INS, JMLR) and international books. He is recognized in prestigious international research rankings, such as: (i) 1st World-Wide Scientist 2020 and 20211 for Research Topic: "OnLine Analytical Processing (OLAP)" by Microsoft Academic, Redmond, WA, USA; (ii) Top 2% World-Wide Scientist 2017, 2018, 2019, 2020 and 2021 by METRICS, Stanford, CA, USA; (iii) Top-100 Italian Scientist in Computer Science and Electronics 2022 and 2023 by Guide2Research, Clifton, NJ, USA; (iv) Top Scientist in Computer Science and Electronics 2019, 2020, 2021, 2022 and 2023 by Guide2Research, Clifton, NJ, USA; (v) Top-100 Researcher in Computer Science 2017-2021 for Research Topic: "Computer Science" by SciVal – Elsevier, Amsterdam, Netherlands; (vi) Top-100 Researcher in Computer Science 2017-2021 for Research Topic: "Theoretical Computer Science" by SciVal – Elsevier, Amsterdam, Netherlands; (vii) Top-100 Researcher in Computer Science 2012-2016 for Research Topic: "Computer Science" by SciVal – Elsevier, Amsterdam, Netherlands; (viii) Top-100 Researcher in Computer Science 2012-2016 for Research Topic: "Theoretical Computer Science" by SciVal – Elsevier, Amsterdam, Netherlands; (ix) Top-100 Italian Scientist in Computer Sciences 2022 by Virtual Italian Academy, Manchester, UK; (x) Top Italian Scientist in Computer Sciences 2016, 2017, 2018, 2019, 2020, 2021 and 2022 by Virtual Italian Academy, Manchester, UK.

Abstract: Correlation analysis has been a powerful paradigm to discover and analyze hidden properties and patterns of large-scale datasets for decades. At now, correlation analysis turns to be a perfect tool for supporting big multidimensional data analysis and mining, with a wide range of relevant properties, including the amenity of supporting meaningfully exploration and discovery of multidimensional ranges kept in such kind of datasets. These operators are thus the basis for several multidimensional big data analytical tools that can be designed and implemented on top of the foundations defined by correlation functions. In line this scientific area, the talk will provide introduction and motivations, models and algorithms, and, finally, best-practices guidelines for effective and efficient implementations of correlation-analysis-based tools over big multidimensional datasets.

Keynote Speech 3: Domination-like Problems with Propagation Property

Prof. Sheng-Lung Peng,

Department of Creative Technologies and Product Design, National Taipei University of Business, Taiwan

Biography: Sheng-Lung Peng is a Professor at the Department of Creative Technologies and Product Design, and the Dean of the College of Innovative Design and Management, National Taipei University of Business in Taiwan. He received the PhD degree from Computer Science Department of National Tsing Hua University in Taiwan. He is an honorary Professor at Beijing Information Science and Technology University and a visiting Professor at Ningxia Institute of Science and Technology in China. He is also an adjunct Professor at National Dong Hwa University in Taiwan and Kazi Nazrul University in India. In addition, he is also an honorary adjunct professor in School of Management of Sir Padampat Singhania University and in School of Computer Science and School of Business of ITM (SLS) Baroda University. Dr. Peng has edited several special issues at journals, such as Frontiers in Public Health, Journal of Internet Technology, IEEE Internet of Things Magazine, Computers and Electrical Engineering, Journal of Information Science and Engineering, and so on. His research interests are algorithm design in the fields of artificial intelligence, bioinformatics, combinatorics, data mining, and networking.

Abstract: Influence maximization is an important problem in the fields of social networks and data mining. Propagation is one of the important properties of this problem. In graph theory, the power domination problem is one of the few problems with propagation properties. This study combines the concepts of influence maximization and power domination problems. We propose some problems with propagation properties. For example, in the k-influence optimization problem, our goal is to find a seed set with the smallest size such that they can spread and influence everyone on the graph through their influence. In the problem, a person is influenced if his/her k friends are influenced. In this research, we consider this propagation property on domination-like problems.

Invited Speech 1: Challenges of Merging Generative AI with Metaverse for Next-Gen Education

Prof. Dimiter Velev,

Department of Informatics, University of National and World Economy (UNWE), Sofia, Bulgaria

Biography: Prof. Dr. Dimiter Velev is with the Department of Informatics at the University of National and World Economy (UNWE), Sofia, Bulgaria, https://www.unwe.bg/en/. Dimiter Velev is the Director of the Science Research Center for Disaster Risk Reduction at UNWE. He holds a M.Sc. degree in Electro-Engineering from the Sofia Technical University, Bulgaria and a Ph.D. degree in Computer systems, Complexes, Systems and Networks from the Pukhov Institute for Modelling in Energy Engineering at the National Academy of Sciences of Ukraine.

Prof. Velev is a member of the International Federation for Information Processing (IFIP), http://ifip.org/, in which he is the Chair of Technical Committee #5 – Information Technology Applications, https://www.ifip.org/bulletin/bulltcs/memtc05.htm. Prof. Velev is also the Chair of the IFIP Domain Committee on Quantum Computing.

Prof. Velev's main areas of academic and R&D interest are Information Technology, Cloud Computing, Mobile Computing, Online Social Networks, Integrated Information Systems for Disaster Management, Artificial Intelligence, Cybersecurity, Virtual Reality, Quantum Computing.

He is a regular chair and a keynote speaker of conferences in Asia and Europe and a reviewer of many scientific publications in journals and conferences. He has published more than 230 ICT-related papers.

Abstract: The integration of Generative AI with the Metaverse presents a transformative approach to education, which promises to create immersive, personalized learning experiences that transcends the traditional classroom practices. However, this integration also introduces a complex array of challenges that must be addressed to unleash its full potential. The speech explores the different aspects of merging Generative AI with the Metaverse for next-generation education with a focus on technological, pedagogical and ethical aspects.

Part IV Poster Presentation

Poster Presentation Guidelines

Materials Provided by the Conference Organizer:

➢ X Racks & Base Fabric Canvases

➢ Adhesive Tapes or Clamps

Materials Provided by the Presenters:

➢ Home-Made Posters

➢ Posters Printed by Conference

Requirement for the Posters:

➢ Material: not limited

Display Rack

Size: 210cm (height) ×120cm (width)

List of Posters

12:00-12:30, November 6, 2024 (Wednesday)
Location: Meeting Room 501   Kunibiki Messe

FSDM4435	Neural Network Multi-algorithm Combination Model for Epidemic Prediction
	Prof.Shaojuan Ma, North Minzu University, China
FSDM4464	Air Quality Assessment Method Based on Normal Cloud Model and Its Application
	Assoc.Prof.Changlin Xu, North Minzu University, China
FSDM4480	Optimization Method of Tourism Planning Using Generative AI and Graph Theory
	Mr. Koki NishiYama, Yamato University, Japan
FSDM4514	Intuitionistic Fuzzy Roust Twin Learning Framework for Imbalanced Data
	Prof.Feng Ji, North Minzu University, China
FSDM4532	Design and Navigation of an AMR for Curb Crossing Tasks under ROS2 Architecture
	Prof. Jin-Siang Shaw, National Taipei University of Technology, Taiwan
FSDM4534	Proposal of An OCT Image Synthesis Method Considering Retinal Repair Process in After-surgery for Macular Hole
	Mr. Koki Imai, Mie University, Japan
FSDM4543	A Study on Fall Prediction Models for Elderly Using Motion Sensor Data — Potential of FFT-based Features —
	Mr. Ryuji F. Aoki, Mie University, Japan
FSDM4565	Pessimistic Multigranulation Roughness of a Hesitant Fuzzy Set in terms of Soft Binary Relations and Its Decision Making Applications
	Prof. Shafaq Naz, University of Gujrat, Pakistan
FSDM4567	Conditions to Stabilize MIMO Systems
	Dr. María Teresa Gasso Matoses, Universitat Politècnica de València, Spain

Part V Oral Presentation

- The oral presentations include the forms of onsite presentations and pre-recorded video presentations. The regular oral presentation is 15 minutes including 2-3 minutes for Q&A; the invited speech is 20 minutes including 2-3 minutes for Q&A.
- For onsite oral presentations, please make the following preparations:
  1) The presentation PowerPoint or PDF should be formatted with figures and tables, plain text is inappropriate;
  2) Speakers are recommended to bring their presentation data in the form of PPT or PDF by a USB memory stick and send one copy to the organizing committee as a backup. For those who have not sent a file to the committee or any update needed, please copy it to the laptop in the session room about 15 minutes before the starting time, and make sure it could be normally displayed;
- The pre-recorded video should be uploaded to FSDM 2024 online submission system **before October 20, 2024** in the format of **.mp4** and time duration should be 15-20 mins.
- Visit *Here* to know How to record a video with PowerPoint.
- The PPT either for onsite presentation or online presentation could be designed as you like with requirements as below:
  - ✓ The conference logo should be added to each PPT slide
  - ✓ Paper ID, title, presenter and affiliation information should be indicated in the first slide
  - ✓ Each slide should be concise, uncluttered and readable from a distance
  - ✓ Include only key words and phrases for visual reinforcement
- All speakers should inform the Session Chair (before the start of your Session) that you are in the meeting room.
- Signed and stamped oral presentation certificate would be issued after presentation.

Best Oral Presentations Award

Selection Criteria

A best presentation will be selected based on the following items:
- ✓ Research Quality
- ✓ Presentation Performance
- ✓ Presentation Language
- ✓ Interaction with Listeners
- ✓ PowerPoint Design
- ✓ Effective Communications

Selection Procedure

- ➢ An assessment sheet will be delivered to listeners before the session;
- ➢ Write the numbers of two candidates for best presentations and submit the filled assessment sheet (with the listener's name and signature) to the Session Chair before the session termination.
- ➢ The Session Chair will count the votes for each presentation and name the winner based on the maximal number of votes. The Session Chair has three votes but can use only one in favor of

his/her own presentation (if any). To avoid any conflict of interests, only registered listeners are entitled to vote.

Nature of the Award:
➢ This award consists of free registration to the next conference FSDM 2025 and a certificate;
➢ The awards will be announced at the official website after the conference.

<p style="text-align:center; color:#4472C4;">**Assessment Sheet Sample**</p>

<h1 style="text-align:center;">Oral Presentation Assessment</h1>

Dear participants,

After carefully listening to the presentations of this session, please kindly recommend two excellent Oral Presentations with reference to the following evaluation criteria.
The Session Chair will count the votes from each presentation and select One Best Oral Presentation in this session. If there is a tie, the Session Chair will make the final decision.
The winner will be announced at the official website after the conference.

You can refer to the following Criteria:

Items	Assessment
Content	Right, Logical, Original, Well-Structured
Language	Standard, Clear, Fluent, Natural
Performance	Spirited Appearance, Dress Appropriately, Behaves Naturally
PPT	Layout, Structure, Typeset, Animation, Multimedia
Reaction	Build a Good Atmosphere, Speech Time Control Properly

Please write down paper ID and give reasons for your recommendation for two candidates:

Paper ID	Reasons

Evaluated by: _____ (Paper ID: _____)

Note: When the session finished, please fill it out and give it to the Session Chair so that the Best Oral Presentations in this session can be selected.

Special Session on "Applied Mathematics and Intelligent Algorithms for Modern Industry (AMIAMI)"

November 6, 2024 (Wednesday)

Session Chair: *Assoc. Prof. Sayan Kaennakham, Suranaree University of Technology, Thailand*

Location: Meeting Room 401   Kunibiki Messe

14:00-14:20	**Invited Speech 2 FSDM4526**	Smart Solutions with Swarm Intelligence Pioneering Industrial Applications and Success Stories *Assoc.Prof.Sayan Kaennakham, Suranaree University of Technology, Thailand*
14:20-14:35	**FSDM4485**	Application of a Genetic Algorithm for Feature Selection to Predict Osteoporotic Fractures *Prof.Marcin Studniarski, University of Lodz, Poland*
14:35-14:50	**FSDM4493**	Experimental Study on Appropriate Sample Size of Lagged Fibonacci Pseudorandom Number Generators for Stochastic Simulations *Assoc.Prof. Hiroshi Haramoto, Ehime University, Japan*
14:50-15:05	**FSDM4572**	Overview of Interpolation Finite Difference Methods Enabling Unlimited High-Accuracy Numerical Calculations *Dr.Tsugio Fukuchi, Tsubokura Ground-Survey and Design Ltd., Fukushima, Japan*
15:05-15:20	**FSDM4539**	Primitive Solutions to Diophantine Equations of the Form $x^2 + zxy + y^2 = M$ and z-Rings *Mr.Chris Busenhart, ETH Zurich, Switzerland*
15:20-15:35		**Coffee Break**
15:35-15:50	**FSDM4585**	LSTM Drug Demand Forecasting with Adjustment Strategies as a Preliminary Step Toward Optimizing Hospital Drug Inventory Management *Ms.Janejira Laomala, Suranaree University of Technology, Thailand*
15:50-16:05	**FSDM4586**	A Comparative Study of Distance Functions in Enhancing Cluster Quality Through Gaussian Kernel-Based Fuzzy C-Means *Mrs.Chantana Simtrakankul, Suranaree University of Technology, Thailand*
16:05-16:20	**FSDM4595**	Investigating XGBoost Efficiency on Diverse Time-Series Data Through PSO Parameter Tuning *Mr.Khwanchai Huailuk, Suranaree University of Technology, Thailand*
16:20-16:35	**FSDM4611**	Early Drought Prediction Using MODIS Time Series with ARIMA and Beta Regression: A Study of the Western United States *Mr.Somsak Limchupanpanich, Suranaree University of Technology, Thailand*

16:35-16:50	**FSDM4463**	An Adaptive IMM for Tracking Maneuvering Target with High Variability of Environment *Mr. Nguyen Van Khuong, Radar Center, Viettel High Technology and Industries Corporation, Vietnam*
16:50-17:05	**FSDM4634**	The Construction Problem of Probabilistic Boolean Networks: New Algorithms and Lower Bound *Mr. Christopher H. Fok, The University of Hong Kong, China*
17:05-17:20	**FSDM4635**	Using CNN to Identify Map Spots and Uncertainty Analysis *Prof. Xin Zhang, Aerospace Information Research Institute, Chinese Academy of Sciences, China*
17:20-17:35	**FSDM4512**	An Approach for Optimizing Route Selection on Network with Shortest Path Problem Using Triangular type-2 Fuzzy Variable *Dr.Tina Verma, Thapar Institute of Engineering & Technology, India*
Below are pre-recorded video oral presentations. Please watch the videos online via (http://www.academicconf.com/video?confname=fsdm2024) during the conference period.		
	FSDM4563	Regressions Involving Circular Variables: an Overview *Assist.Prof.Sungsu Kim, University of Wisconsin-Green Bay, USA*
	FSDM4564	Dengue Virus Infection During Window Period of Consecutive Outbreaks in Nepal and Assessment of Clinical Parameters *Assoc.Prof.Binod Manandhar, Clark Atlanta University, USA*
	FSDM4589	Construction of a Generalized Computational Experiment and Its Application in Mathematical Modeling Problems *Dr.Alexander Bondarev, Keldysh Institute of Applied Mathematics of the Russian Academy of Sciences, Russia*
	FSDM4601	Comparative Analysis of Radial Basis Functions and Cubic Splines for Data Imputation *Mr.Wisut Kitchainukoon, Loei Rajabhat University, Thailand*
	FSDM4602	Programming Random Change of Variables *Mr. Juan Ramirez, Operaciones Digitales, Mexico*
	FSDM4613	PR EoS a Cubic Equation of State to Model Fluid Properties of Mixtures *Assoc.Prof.Geanette Polanco, UiT The Arctic University of Norway, Norway*

Oral Session 1: Data Mining, Machine Learning and Neural Networks
November 7, 2024 (Thursday)
Session Chair: *Assoc. Prof. Konstantin Ryabinin, Center for Astronomy of Heidelberg University, Germany*

Location: Meeting Room 401   Kunibiki Messe

09:00-09:15	**FSDM4562**	Satellite Telescope Self-Calibration through Precise Stellar Data Mining *Assoc. Prof. Konstantin Ryabinin, Center for Astronomy of Heidelberg University, Germany*
09:15-09:30	**FSDM4558**	An Encrypted Forensic Method for Preventing Data Poisoning Attacks in Federated Learning *Prof.Mahdee Jodayree, McMaster University, Canada*
09:30-09:45	**FSDM4521**	A Data Mining Approach to Modeling Annual CO_2 Emission Per Capital for Asian Countries *Prof. ChienHsing Wu, National University of Kaohsiung, Taiwan*
09:45-10:00	**FSDM4522**	Discovering Innovative Ideas in Social Posts for Sustainable Product Development via Data Mining Approach *Prof. Shu-Chen Kao, Kun Shan University, Taiwan*
10:00-10:15	**FSDM4540**	Vision Transformers and CNN-Based Knowledge-Distillation for Histopathological Image Classification *Mr. Seddik Boudissa, Mie University, Japan*
10:15-10:30	**FSDM4596**	Evaluating the Effectiveness of the Generalized Sigmoid in YOLOv8 for Drug Detection and Classification *Mr.Anan Panphuech, Suranaree University of Technology, Thailand*
10:30-10:45		**Coffee Break**
10:45-11:00	**FSDM4597**	Performance Assessment of Fourier Convolutional Neural Networks in Medical Image Analysis for Breast Cancer Diagnosis *Mr.Songkiat Lowmunkhong, Suranaree University of Technology, Thailand*
11:00-11:15	**FSDM4598**	Investigating the Performance of LSTM Models Optimized by Firefly Algorithms on Diverse Time-Series Data *Mr.Papon Tantiwanichanon, Suranaree University of Technology, Thailand*
11:15-11:30	**FSDM4505**	Knowledge Graph-based BIM Interior Furniture Intelligent Recommendation System *Mr.Junfu Feng, Beijing University of Civil Engineering and Architecture, China*
11:30-11:45	**FSDM4407**	Classification Using U-Net CN On Multi-Resolution CT Scan Image *Assoc. Prof. Sugiyarto Surono, FAST Universitas Ahmad Dahlan Yogyakarta, Indonesia*
11:45-12:00	**FSDM4615**	PINAR: Population INfograms for Analysis and Research *Dr. Emre Öner Tartan, Baskent University, Turkey*

Oral Session 2: Interdisciplinary Field of Fuzzy System and Data Mining & Special Sessions on "Application of Generative AI" and "Safeguard AI-based Automotive and Automation Product"

November 7, 2024 (Thursday)
Session Chair:

Prof. Dimiter Velev, University of National and World Economy, Bulgaria

Location: Meeting Room 401   Kunibiki Messe

Time	Paper	Title / Author
13:30-13:50	**Invited Speech 3 FSDM4433**	Explainable Statistical Evaluation and Enhancement of Automated Driving System Safety Architectures *Mr. Rainer Faller, exida.com, LLC, USA*
13:50-14:05	**FSDM4560**	Solving A.I Alignment Issues with Classical Safety Technology *Mr.Yusen Lin Bentley, exida Safety Systems (Shanghai) Co., Ltd, China*
14:05-14:20	**FSDM4587**	Risks and Threats in Using Generative AI *Prof.Plamena Zlateva, University of National and World Economy, Bulgaria*
14:20-14:40	**Invited Speech 4 FSDM4414**	Quantale-Valued Tolerance Structures: Categorical Perspective *Prof. T. M. G. Ahsanullah, King Saud University, Saudi Arabia*
14:40-14:55	**FSDM4609**	An Efficient Approach for Mining Temporal Fuzzy High-Utility Itemsets *Prof.Carson Leung, University of Manitoba, Canada*
14:55-15:10	**FSDM4530**	A Theory for Covid-19 Testing to Save Both Resources and Time *Prof.Chihjen Lee, Cedars-Sinai Medical Center, USA*
15:10-15:25		**Coffee Break**
15:25-15:40	**FSDM4584**	The Impact of Firefly Algorithm (FA) Optimization on Gaussian Kernel-Based Fuzzy C-Means Clustering (GKFCM) Efficiency *Mr.Narongdech Dungkratoke, Suranaree University of Technology, Thailand*
15:40-15:55	**FSDM4533**	A Preliminary Investigation into the Current Status and Prospects of Visual Analysis of Acoustic Properties for the Singing Voice *Prof. Jie Hua and Ms. Wei Yi, Macquarie University, Australia*
15:55-16:10	**FSDM4617**	Usability Testing of Card-Based Design Ideation: IoT Tiles Inventor Toolkit *Dr.Leeladhar Ganvir, Symbiosis Institute of Design, India*
16:10-16:25	**FSDM4541**	VReport 2.0: Report Generator to Support Independent Learning for the Visually Impaired Students in Science and Engineering *Ms.Yubin Ok, Sookmyung Women's University, Republic of Korea*
16:25-16:40	**FSDM4600**	A Hybrid Decision-Making Framework for Selecting the Emergency Alternatives *Dr.Liguo Fei, Shandong University, China*
16:40-16:55	**FSDM4511**	Super-resolution Reconstruction Technology of Beidou Satellite Transmission Images Based on Adaptive Mechanism *Prof. Lanyong Zhang, Harbin Engineering University, China*

Below are pre-recorded video oral presentations. Please watch the videos online via (http://www.academicconf.com/video?confname=fsdm2024) during the conference period.

|	FSDM4486	Sentiment and Emotion-aware Multi-criteria Fuzzy Group Decision Making System *Mr.Adilet Yerkin, Kazakh-British Technical University, Kazakhstan*
	FSDM4610	Linguistic Text Mining on Multi-Word Units *Prof.Alberto Postiglione, University of Salerno, Italy*
	FSDM4626	A Mobile Robot Arm for Providing Daily Support to Cantonese Speaking Elderly Persons *Dr.Man-Ching Yuen, The Chinese University of Hong Kong, China*

Part VI Conference Venue

Kunibiki Messe
(Shimane Prefectural Convention Center)

The biggest convention center in Shimane prefecture, Kunibiki Messe, is located in the center of Matsue City. There are Exhibition Hall (4,018 sqm), Multipurpose Hall (686 sqm), International Conference Hall (510 sheets), and 19 meeting rooms.
Free Wi-Fi is available in building.

It takes only 7 minutes on foot from JR Matsue Station to Kunibiki Messe.
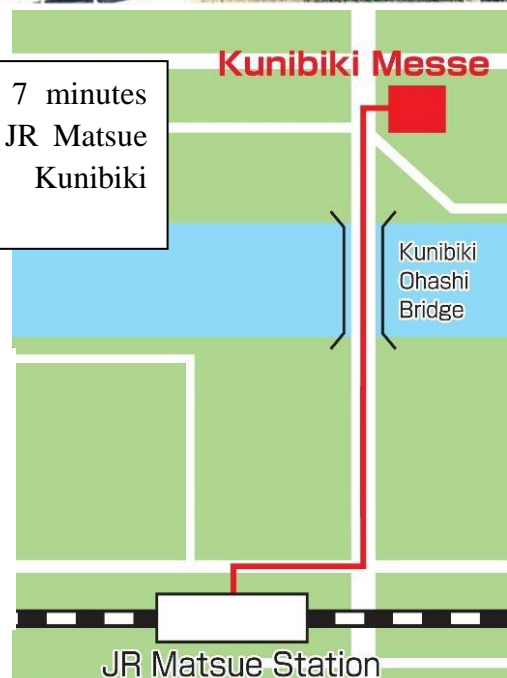
Kunibiki Messe
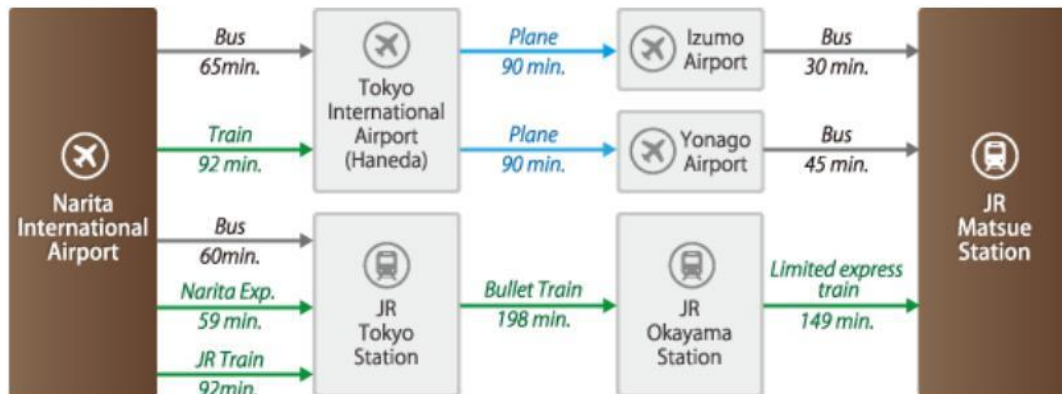**Address:** 1-2-1 Gakuen Minami Matsue City, Shimane, JAPAN 690-0826
Tel: +81+852-24-1111
Fax: +81+852-22-9219
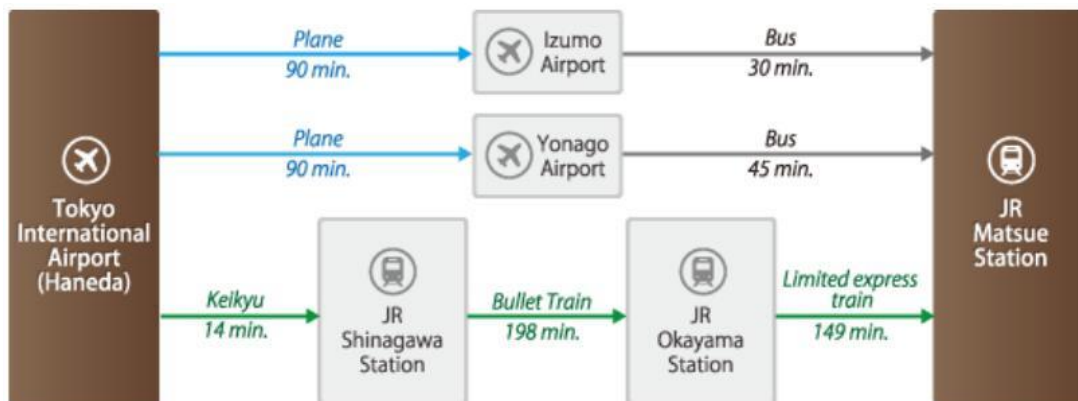**E-mail:** kunibiki@kunibikimesse.jp

Access to JR Matsue Station:

🚃 → Train   🚌 → Bus   ✈ → Plane

1. From Narita International Airport

Narita International Airport	Bus 65min. → **Tokyo International Airport (Haneda)**	Plane 90 min. → **Izumo Airport**	Bus 30 min. → **JR Matsue Station**
	Train 92 min. →	Plane 90 min. → **Yonago Airport**	Bus 45 min. →
	Bus 60min. / Narita Exp. 59 min. / JR Train 92min. → **JR Tokyo Station**	Bullet Train 198 min. → **JR Okayama Station**	Limited express train 149 min. →

2. From Tokyo International Airport

Tokyo International Airport (Haneda)	Plane 90 min. → **Izumo Airport**	Bus 30 min. → **JR Matsue Station**	
	Plane 90 min. → **Yonago Airport**	Bus 45 min. →	
	Keikyu 14 min. → **JR Shinagawa Station**	Bullet Train 198 min. → **JR Okayama Station**	Limited express train 149 min. →

3. From Kansai International Airport

Kansai International Airport	Bus 75min. → **Osaka International Airport**	Plane 60 min. → **Izumo Airport**	Bus 30 min. → **JR Matsue Station**
	JR Train 49 min. → **JR shin-Osaka Station**	Bullet Train 46min. → **JR Okayama Station**	Limited express train 149 min. →

Part VII Acknowledgements

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H

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I

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K

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N

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Dr. H. M. Srivastava, Professor, Department of Mathematics and Statistics, University of Victoria, Canada

T

Dr. Stefania Tomasiello, Associate Professor, Department of Industrial Engineering, University of Salerno, Italy; Visiting Professor, Institute of Computer Science, University of Tartu, Estonia

Dr. Oleksii Tyshchenko, Researcher, Institute for Research and Applications of Fuzzy Modeling, University of Ostrava, Czech Republic

W

Dr. Xinxing Wu, Assistant Professor, Midway University, Kentucky, United States

X

Dr. Shuyin Xia, Professor, Chongqing University of Posts and Telecommunications, China

Dr. Fuyuan Xiao, Professor, School of Big Data and Software Engineering, Chongqing University, China

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Y

Dr. Elaheh Yadegaridehkordi, Lecturer, College of Information and Communications Technology, School of Engineering and Technology, Central Queensland University (CQUniversity), Australia

Dr. Takeshi Yamakawa, Professor Emeritus of Kyushu Institute of Technology (KIT); Founding Director of Fuzzy Logic Systems Institute (FLSI), Japan

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