DEXA 2024

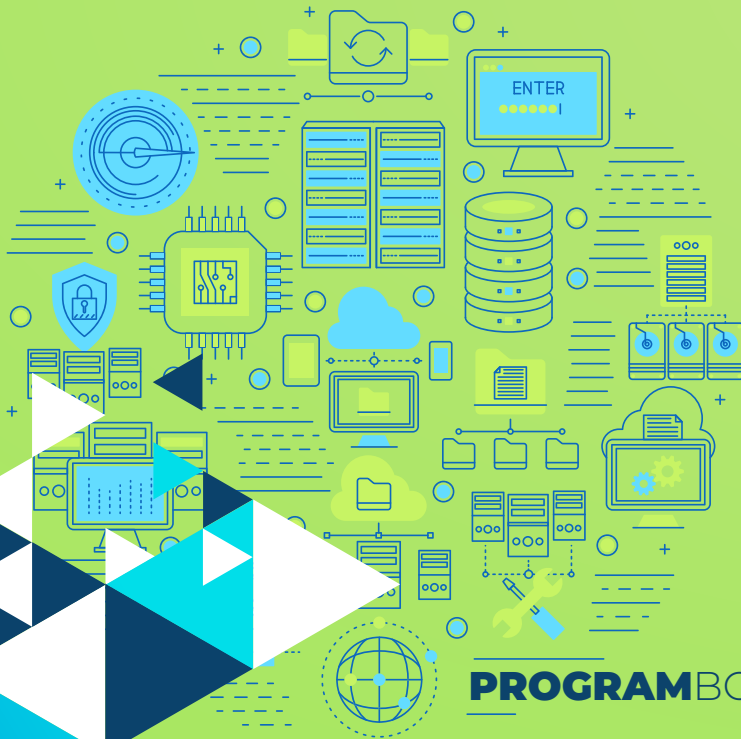## Conferences & Workshops

35TH DEXA CONFERENCES AND WORKSHOPS

26-28 August 2024

University of Naples Federico II, Naples, Italy

PROGRAMBOOK

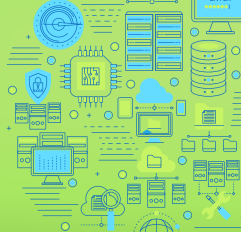DEXA2024 • DAWAK2024 • EGOVIS2024
AISys2024 • CIU2024 • IWCFS2024

The 35th DEXA Conferences & Workshops 2024
26 – 28 August 2024
Naples, Italy

THE CONFERENCES

DEXA 2024
35th International Conference on Database and Expert Systems Applications

DaWaK 2024
26th International Conference on Big Data Analytics and Knowledge Discovery

EGOVIS 2024
13th International Conference on Electronic Government and the Information Systems Perspective

THE WORKSHOPS

AISys 2024
4rd International Workshop on AI System Engineering: Math, Modelling and Software

IWCFS 2024
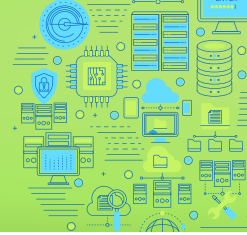8th International Workshop on Cyber-Security and Functional Safety in Cyber-Physical Systems

CIU 2024
2nd International Workshop on Certainty in Uncertainty: Exploring Probabilistic Approaches in AI

CONTENT

Welcome Message

Welcome to the 35th DEXA 2024 Conferences & Workshops!

More than thirty years ago, Prof. Dr. Roland Wagner and Prof. Dr. A Min Tjoa founded DEXA to address the growing need for an international conference on Databases and Expert Systems Applications. What started as a small gathering of forward-thinking academics in Austria has evolved into a global event, bringing together over 5,000 participants, distinguished speakers, and esteemed guests from around the world over the past three decades.

As organizers, it fills us with immense pride to see how DEXA has grown. This year's success is thanks to the collaborative efforts of the Institute of Telecooperation at Johannes Kepler University Linz, the Software Competence Center Hagenberg (SCCH), and our host, University of Naples Federico II, Italy.

At DEXA 2024, we promise you three unique experiences:

A Learning experience: Dive into a rich program featuring 123 thought-provoking presentations and three distinguished keynote addresses across 36 sessions.

A Networking experience: Build valuable partnerships and lifelong friendships with scholars from 34 countries and over 82 research and academic institutions.

A Motivational experience: Discover the latest breakthroughs in our fields, inspiring you towards your own research and discoveries.

Our social program includes a Welcome Reception and a Conference Dinner, perfect for unwinding and connecting with fellow attendees.

We extend our heartfelt gratitude to the DEXA program committee chairs and members for their meticulous review of paper submissions and for crafting this captivating program. We are confident that this year's presentations and talks will inspire you and foster future collaborations.

Special thanks to our keynote speakers: Prof. Carlo Sansone from the University of Naples Federico II, Italy; Prof. A Min Tjoa from Vienna University of Technology, Austria and Prof. Toshiyuki Amagasa from the University of Tsukuba, Japan.

Every effort has been made to ensure your comfort and convenience. The dedication of our team, and many others working behind the scenes, contributes to the unique atmosphere that makes each DEXA conference feel like a homecoming.

Welcome to Naples for the 2024 DEXA conferences and workshops. We are truly grateful for your participation and hope you thoroughly enjoy the conference.

Gabriele Kotsis
A Min Tjoa
Ismail Khalil
Lukas Fischer
Bernhard Moser

Gabriele Kotsis

A Min Tjoa

Ismail Khalil

Lukas Fischer

Bernhard Moser

Welcome Message

Welcome to the University of Naples Federico II

On behalf of the University of Naples Federico II, it is our great pleasure to welcome you to DEXA 2024 conferences and workshops from 26th to 28th August 2024. We are delighted to host this prestigious event in our vibrant city and are excited to share a stimulating and enriching program with all of you in this year that is so special for our community as Federico II University celebrates its 800 hundred years of activity making our University the oldest public University of the World.

Nicola Mazzocca

This conference brings together leading researchers, practitioners, and academics from around the world to discuss the latest advancements, innovations, and challenges in the fields of database systems, AI, big data, and machine learning. Our diverse and comprehensive program includes keynote speeches from world-renowned experts, technical sessions featuring cutting-edge research, and great opportunities for networking and collaboration.

We believe that the convergence of these fields offers unprecedented opportunities to drive innovation and solve complex problems across various domains. This conference is not just an opportunity to share knowledge, but also a platform to forge new partnerships and inspire future research directions.

Elio Masciari

Our local committee has worked diligently to ensure a seamless and memorable experience for all participants. From the careful planning of the sessions to the selection of unique local venues for social events, every detail has been crafted to facilitate an engaging and productive environment.

We would like to extend our heartfelt gratitude to our sponsors, partners, and volunteers for their unwavering support and contributions. Without their efforts, this conference would not have been possible.
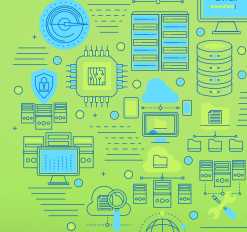
We encourage you to take full advantage of the diverse program and the beautiful surroundings of our city. Explore the local culture, enjoy the hospitality, and immerse yourself in the vibrant atmosphere that our city has to offer.

Thank you for joining us, and we wish you a successful and enjoyable conference!

Nicola Mazzocca
Elio Masciari

DEXA 2024 General co-chairs

The Organisation

Steering Committee:
• Gabriele Kotsis, Johannes Kepler University Linz, Austria
• A Min Tjoa, Vienna University of Technology, Austria
• Lukas Fischer, Software Competence Center Hagenberg, Austria
• Bernhard Moser, Software Competence Center Hagenberg, Austria
• Ismail Khalil, Johannes Kepler University Linz, Austria
• Nicola Mazzocca, University of Naples Federico II, Italy
• Elio Masciari, University of Naples Federico II, Italy

DEXA2024 Program Committee Co-Chairs:
• Christine Strauss, University of Vienna, Austria
• Toshiyuki Amagasa, University of Tsukuba, Japan
• Giuseppe Manco, Italian National Research Council (CNR), Italy

DAWAK2024 Program Committee Co-Chairs:
• Robert Wrembel, Poznan University of Technology; Artificial Intelligence and Cybersecurity Center (Poland)
• Silvia Chiusano, Polytechnic University of Turin, Italy

EGOVIS2024 Program Committee Chair:
• Andrea Kő, Corvinus University Budapest, Hungary

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• Paolo Meloni, University of Cagliari, Italy
• Michael Lunglmayr, Johannes Kepler University Linz, Austria
• Gerald Czech, Upper Austrian Fire Brigade Association, Austria
• Bernhard Moser, Software Competence Center Hagenberg Austria

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• Johannes Sametinger, Johannes Kepler University Linz, Austria

CIU2024 Workshop Co-Chairs:
• Anna Christina Glock, Software Competence Center Hagenberg, Austria
• David Baumgartner, Norwegian University of Science and Technology & ProbAI, Norway
• Michael Mayr, Software Competence Center Hagenberg, Austria
• Sabrina Luftensteiner, Software Competence Center Hagenberg, Austria

Organizing Committee:
• Hesti Sudjana, Johannes Kepler University Linz, Austria
• Paul Wiesinger, Johannes Kepler University Linz, Austria
• Heriansyah, Johannes Kepler University Linz, Austria

Co-Organizers & Sponsors:
• Software Competence Center Hagenberg (SCCH)
• Johannes Kepler University Linz (JKU Linz)
• Web-based Applications Society (@WAS)
• University of Naples Federico II, Italy

Keynote Speakers

Keynote Talk 1
Monday, 26 August 2024 – 09:30 – 10:15

Digital Humanism as an Enabler for a Holistic Socio-Technical Approach to the Latest Developments in Computer Science and Artificial Intelligence
***A Min Tjoa**, TU WIEN (Vienna University of Technology), Austria*

Abstract
The rapid development of computer science and artificial intelligence (AI) has brought about transformative changes, but not without significant ethical, social, and technical challenges. As early as 2017, Tim Berners-Lee, the inventor of the World Wide Web, warned of the "nasty storm" threatening the future of the web, including the proliferation of fake news, propaganda, and increasing polarization. These issues highlight the urgent need for a paradigm that ensures technology serves the best interests of humanity.

This keynote will explore the foundational principles of Digital Humanism and its role in guiding the development of computer science and AI to align with human values and societal well-being.\
In December 2023, the United Nations Advisory Panel on AI released its interim report, "Governing AI for Humanity," which highlights the need for AI governance to address challenges and harness AI's potential in an inclusive way, ensuring that no one is left behind. A key measure of AI's success will be its contribution to achieving the SDGs.

The keynote will illustrate how Digital Humanism can be operationalized to create technologies that enhance human capabilities and societal well-being. It will highlight the need for interdisciplinary research and development to harness the potential of computer science and AI for the benefit of humanity.
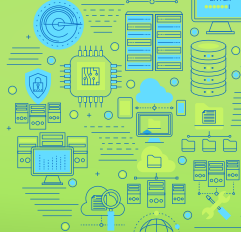
Digital Humanism offers a vital pathway for navigating the complexities of modern technological advancements. By taking a holistic socio-technical approach, it can be ensured that developments in computer science and AI are aligned with our core human values, thereby fostering a more just, ethical, and sustainable digital future.

Short Bio
A Min Tjoa has been a full Professor of Software Technology at TU Wien since 1994, achieving Emeritus status in October 2021. Currently, he represents TU Wien as one of six faculty members in the Austrian Inter-university Doctoral Program on Precision Livestock Farming (PLFDoc), starting in 2024. He is also the Executive Chairperson of the Austrian Center of Excellence for IT-Security and Privacy (SBA), an Adjunct Professor at Institut Teknologi Bandung (ITB) in Indonesia, a Guest Professor at the National Institute of Informatics (NII) in Japan, a Member of the Senate of the Christian Doppler Foundation for High-Technology Transfer Labs in Austria, and the Editor-in-Chief of Springer's Transactions on Large-Scale Data- and Knowledge-Centered Systems.

Prof. Tjoa has authored over 250 peer-reviewed articles in journals and conferences, focusing on Data Science, Security, Privacy, Information Engineering, ICT for People with Special Needs, and IT and SDGs. Internationally, he has served as the Head of the Austrian Delegation to the United Nations Commission on Science and Technology for Development (CSTD) since 2008, chairing the commission in 2019 and serving as Vice-Chair from 2020-2022. He is a member of the Executive Board of ASEA-UNINET, coordinating Technology, Innovation, and Sustainability Projects since 2020. Additionally, he has held guest professorships at the University of Zürich, EPFL-Lausanne, University of Kyushu, and the Technical University of Prague. He has been the Vice-President of Infoterm and Honorary Secretary of IFIP from 2013-2019, the international organization for IT societies such as ACM and the British Computer Society.

Prof. Tjoa has received numerous awards and honors, including an Honorary Doctorate from the Czech Technical University in Prague, an Honorary Professorship from the University of Hue in Vietnam, the Companion of the Most Exalted Order of the White Elephant in Thailand (2011), the IFIP Silver Core and Service Award, the Von Kempelen Medal from the Technical University of Bratislava in Slovakia, the Felber Gold Medal from the Czech Technical University, and the Austrian Honorary Cross for Science and the Arts, 1st Class, in 2022.

Keynote Talk 2
Monday, 26 August 2024 – 10:45 – 11:30

Deep Entity Processing in the Era of Large Language Models:Challenges and Opportunities
Toshiyuki Amagasa, University of Tsukuba, Japan

Abstract
Handling entities has long been a critical task in data analytics and integration, with over 80% of time and effort often devoted to data preprocessing. Improving the performance of this task
has been a persistent challenge. Recently, transformer-based pre-trained language models and large language models (LLMs) have emerged as key tools for entity processing tasks such as named entity recognition (NER) and entity matching. However, these models introduce new challenges, including significant demands for computational resources and high-quality training data. In this talk, we will review recent advances in deep entity processing and explore the associated challenges and research opportunities.

Short Bio
Toshiyuki Amagasa received B.E., M.E., and Ph.D from the Department of Computer Science, Gunma University in 1994, 1996, and 1999, respectively. He is currently a full professor at the Center for Computational Sciences, University of Tsukuba. His research interests cover database systems, data mining, and database application in scientific domains. He is a senior member of IPSJ, IEICE, and IEEE, a board member of DBSJ, and a member of ACM.

Keynote Talk 3
Tuesday, 27 August 2024 – 11:45 – 12:30

Multimodal Deep Learning in Medical Imaging
Carlo Sansone, Department of Electrical Engineering and Information Technology, University of Naples Federico II, Italy

Abstract
In this talk, we will consider how Deep Learning (DL) approaches can profitably exploit the presence of multiple data sources in the medical domain. First, the need to be able to use information from multimodal data sources is addressed. Starting from an analysis of different multimodal data fusion techniques, an innovative approach will be proposed that allows the different modalities to influence each other.
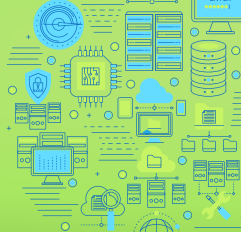However, in medical applications it is often very difficult to obtain high quality and balanced labelled datasets due to privacy and sharing policy issues. Therefore, several applications have leveraged DL approaches in data augmentation techniques, proposing models that can create new realistic and synthetic samples. Consequently, a new data source can be identified, namely a synthetic data source. In this context, a data augmentation method based on deep learning, specifically designed for the medical domain, will be presented. It exploits the biological characteristics of images by implementing a physiologically-aware synthetic image generation process.

Short Bio
Carlo Sansone is currently full professor of Computer Science at the Department of Electrical Engineering and Information Technology of the University of Naples Federico II, where he coordinates the Master in Human-Centred Artificial Intelligence. His research interests cover the areas of image analysis and recognition, machine learning and deep learning. From an application perspective, his main contributions have been in the fields of biomedical image analysis, biometrics, computer network intrusion detection and image forensics. He has coordinated several projects in the fields of biomedical image interpretation, network intrusion detection and cyberbullying detection using artificial intelligence techniques.
Prof. Sansone is a senior member of the IEEE and a member of the IAPR and ACM. In 2012, he was elected Vice President of GIRPR (the Italian association affiliated to IAPR) for two terms (four years). He was appointed IAPR Fellow and AAIA (Asia-Pacific Artificial Intelligence Association) Fellow in 2022 and AIIA (International Artificial Intelligence Industry Alliance) Fellow in 2024. He is also a member of the Board of Directors of the CINI's National Laboratory of Artificial Intelligence and Intelligent Systems (AIIS) and Vice President of the Italian foundation FAIR (Future Artificial Intelligence Research); the author of over 250 research articles in international journals and conference proceedings and has co-edited four special issues of international journals and five books. He is associate editor of the journal Information Fusion.

Conferences & Workshops Program Schedule

DAY 1, Monday, 26 August 2024

Time				
08:00 – 09:00	**Registration** @ Foyer Auditorium Scipione Bobbio (1st fl.)			
09:00 – 10:15	Room: Auditorium Scipione Bobbio (1st fl.) • **Opening Session** • **Keynote Talk 1**			
10:15 – 10:45	**Coffee break**			
10:45 – 11:30	Room: Auditorium Scipione Bobbio (1st fl.) **Keynote Talk 2**			
	Track 1 Auditorium Scipione Bobbio (1st fl.)	**Track 2** Aula C (2nd fl.)	**Track 3** Aula D (2nd fl.)	**Track 4** Aula E (2nd fl.)
11:30 – 12:30	**DEXA 1** **Database Management & Query Optimization 1**	**DAWAK 1** **Applications 1**	**DEXA 2** **Data Security and Privacy**	**DAWAK 2** **Classification 1**
12:30 – 13:30	**Lunch break**			
13:30 – 15:00	**DEXA 3** **Database Management & Query Optimization 2**	**DAWAK 3** **Modeling & Design**	**DEXA 4** **Graph Theory and Network Analysis**	**EGOVIS 1** **E-Government Cases**
15:00 – 15:30	**Coffee break**			
15:30 – 17:00	**DEXA 5** **Spatiotemporal Data and Mobility Analysis**	**DAWAK 4** **ML Methods and Applications 1**	**DEXA 6** **Computer Vision and Image Processing**	**EGOVIS 2** **AI in E-Government**
17:00 – 19:00	**Welcome Reception** @ Piazzale Tecchio building, University of Naples Federico II			

Monday, 26 August 2024

08:00 – 09:00	Registration

08:00 – 09:00   Registration

09:00 – 10:15   **Opening**   **Auditorium Scipione Bobbio (1st fl.)**
                 Keynote Talk 1:
                 Digital Humanism as an Enabler for a Holistic Socio-Technical Approach to the Latest Developments in Computer Science and Artificial Intelligence
                 A Min Tjoa, *TU WIEN (Vienna University of Technology), Austria*
                 Session Chair: Gabriele Kotsis

10:15 – 10:45   **Coffee Break**

10:45 – 11:30   **Keynote Talk 2**   **Auditorium Scipione Bobbio (1st fl.)**
                 Deep Entity Processing in the Era of Large Language Models:Challenges and Opportunities
                 Toshiyuki Amagasa, University of Tsukuba, Japan
                 Session chair: Robert Wrembel

11:30 – 12:30   **Parallel Session**

                 DEXA 1: Database Management & Query Optimization 1   **Auditorium Scipione Bobbio (1st fl.)**
                 Session Chair: Sharma Chakravarthy
                 · **Improving the Accuracy of Text-to-SQL Tools based on Large**
                 Gustavo M.C. Coelho, Eduardo R.S. Nascimento, Yenier T. Izquierdo, Grettel M. García, Lucas Feijó, Melissa Lemos, Robinson L.S. Garcia, Aiko R. de Oliveira, João P. Pinheiro, Marco A. Casanova Brazil

• **QPSEncoder: A Database Workload Encoder with Deep Learning**
Jianwen Yang, Qiuhong Zhang, Jin Yan, Zhiming Ding, Meiling Zhu, Xinjie Lv
China

DAWAK 1: Applications 1   Aula C (2nd fl.)
Session Chair: Robert Wrembel
• **QPAVE: A Multi-task Question Answering Approach for Fine-Grained Product Attribute Value Extraction**
Kassem Sabeh, Mouna Kacimi, Johann Gamper
Italy

DEXA 2: Data Security and Privacy   Aula D (2nd fl.)
Session Chair: Christoph Stach
• **A Data-Driven Approach for Designing Wireless Signal Propagation Model**
Zhihui Wang, Wenbiao Xing, Yu Wang, Yishan Liu
China
• **Identifying Personal Identifiable Information (PII) in Unstructured Text: A Comparative Study on Transformers**
Md Hasan Shahriar, Anne V.D.M. Kayem, David Reich, Christoph Meinel
Germany,UK

DAWAK 2: Classification 1   Aula E (2nd fl.)
Session Chair: Silvia Chiusano
• **Towards Hybrid Embedded Feature Selection and Classification Approach with Slim-TSF**
Anli Ji, Chetraj Pandey, Berkay Aydin
USA
• **Evaluation of high sparsity strategies for efficient binary classification**
Laura Erhan, Lucia Cavallaro, Mattia Andrea Antinori, Antonio Liotta
Netherlands, Italy

12:30 – 13:30   **Lunch Break**

13:30 – 15:00   **Parallel Session**
DEXA 3: Database Management & Query Optimization 2   Auditorium Scipione Bobbio (1st fl.)
Session Chair: Buo Savong (Hashimoto)
• **Efficient Random Sampling from Very Large Databases**
Idan Cohen, Aviv Yehezkel, Zohar Yakhini
Israel
• **SQL-to-Schema Enhances Schema Linking in Text-to-SQL**
Sun Yang, Qiong Su, Zhishuai Li, Ziyue Li, Hangyu Mao, Chenxi Liu, Rui Zhao
China, Germany, Singapore
• **Efficient Algorithms for Top-k Stabbing Queries on Weighted Interval Data**
Daichi Amagata, Junya Yamada, Yuchen Ji, Takahiro Hara
Japan
• **A Hierarchical Storage Mechanism for Hot and Cold Data Based on Temperature Model**
Shicong Ma, Tianhai Zhao, Jianhua Gu, Yunlan Wang
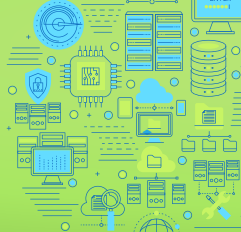*China*

DAWAK 3: Modeling & Design   Aula C (2nd fl.)
Session Chair: Robert Wrembel
• **LiteSelect: A Lightweight Adaptive Learning Algorithm for Online Index Selection**
Xiaoying Wu, Senyang Wang, Xin Liu, Dimitri Theodoratos, Md Rakibul Hasan
China, USA

13:30 – 15:00
- **IDAGEmb : An Incremental Data Alignment Based on Graph Embedding**
  Oumaima El Haddadi, Max Chevalier, Bernard Dousset, Ahmad El Allaoui, Anass El Haddadi, Olivier Teste
  France, Morocco
- **Learning Paradigms and Modelling Methodologies for Digital Twins in Process Industry**
  Michael Mayr, Georgios Chasparis, Josef Küng
  Austria

DEXA 4: Graph Theory and Network Analysis   Aula D (2nd fl.)
Session Chair: Ziwei XU
- **Fast Subgraph Search with Graph Code Indices**
  Naoya Funamoto, Akihiro Inokuchi
  Japan
- **Completing Predicates based on Alignment Rules from Knowledge Graphs**
  Emetis Niazmand, Maria-Esther Vidal
  Germany
- **Enriching Hierarchical Navigable Small World searches with result diversification**
  Mauro Weber, Joao Silva-Leite, Lucio F.D. Santos, Daniel de Oliveira, Marcos Bedo
  Brazil
- **An Efficient Indexing Method for Dynamic Graph kNN**
  Shohei Matsugu, Suomi Kobayashi, Hiroaki Shiokawa
  Japan

EGOVIS 1: E-Government Cases   Aula E (2nd fl.)
Session Chair: Asefeh Asemi
- **Artificial Intelligence as a Mechanism for Transparency and Trust in e-Government: Algorithm for the Detection of Peruvian Marine Species in High Seas During Closed Season**
  Carlos Palma, Manuel Tupia, Rony Cueva
  Peru
- **Implementation issues of a new universal personal identifier: the case of Hungarian digital citizenship**
  Gábor Klimkó, József Károly Kiss, Péter József Kiss
  Hungary
- **From Routine to Automation: How RPA Advances Administrative Practices in Swedish Universities**
  Evrim Oya Güner, Shengnan Han, Gustaf Juell-Skielse
  Sweden
- **Assessment of the eID Ecosystem as a Part of the State's Critical Infrastructure: The Case of Estonia**
  Karolina Bejussova, Silvia Lips, Rozha K. Ahmed, Dirk Draheim
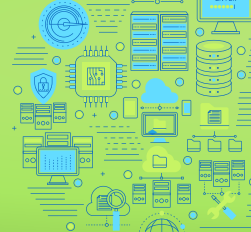 *Estonia, Iraq*

15:00 – 15:30   **Coffee Break**

15:30 – 17:00   **Parallel Session**
DEXA 5: Spatiotemporal Data and Mobility Analysis   Auditorium Scipione Bobbio (1st fl.)
Session Chair: Gabriele Kotsis
- **UltraMovelets: Efficient Movelet Extraction for Multiple Aspect Trajectory Classification**
  Tarlis Tortelli Portela, Vanessa Lago Machado, Jonata Tyska Carvalho, Vania Bogorny, Anna Bernasconi, Chiara Renso
  Brazil, Italy

15:30 – 17:00
- **Understanding Human Mobility Characteristics through Behavior and Corresponding Environmental Information**
  Ryuichi Sudo, Hiroyuki Toda
  Japan
- **Traffic Flow Prediction Based on Deep Spatio-Temporal Domain Adaptation**
  Zhihui Wang, Bingxin Li
  China
- **Exploring of STGNN for Traffic Forecasting at Expanding Traffic Network**
  Tomoki Kawabata, Hiroyuki Toda
  Japan

DAWAK 4: ML Methods and Applications 1   Aula C (2nd fl.)
Session Chair: Sabrina Luftensteiner
- **Exploring Causal Chain Identification: Comprehensive Insights from Text & Knowledge Graphs**
  Ziwei Xu, Ryutaro Ichise
  Japan
- **Towards regional explanations with validity domains for local explanations**
  Robin Cugny, Julien Aligon, Max Chevalier, Geoffrey Roman Jimenez, Olivier Teste
  France
- **Analyzing a Decade of Evolution: Trends in Natural Language Processing**
  Richard A A Jonker, Tiago Almeida, Sérgio Matos
  Portugal
- **Improving Serendipity for Collaborative Metric Learning based on Mutual Proximity**
  Taichi Nakashima, Hanxiong Chen, Kazutaka Furuse
  Japan

DEXA 6: Computer Vision and Image Processing   Aula D (2nd fl.)
Session Chair: Ranran Bian
- **Video Situation Monitoring Using Continuous Queries**
  Hafsa Billah, Sharma Chakravarthy
  USA
- **Semi-Automated Disaster Image Tagging While Protecting Privacy: A Case Study**
  Ikuto Takashima, Kotaro Yasuda, Yukiko Takeuchi, Masayoshi Aritsugi, Akihiro Shibayama, Israel Mendonça
  Japan
- **Unsupervised Segmentation of CNC Milling Sensor Data into Comparable Cutting Conditions**
  Manuel Götz, Maximilian Rost, Dennis Wilkner, Frank Schirmeier
  Germany

EGOVIS 2: AI in E-Government
Session Chair: Andrea Kő
- **ANFIS-Based Investment Recommendations for Government Bonds: Personalized Approach**
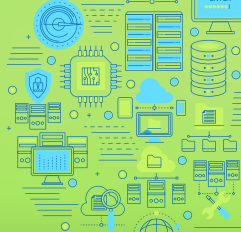 *Asefeh Asemi, Adeleh Asemi Zavareh, Andrea Kő*
  Hungary, Malaysia
- **Aligning AI Tool Classification with the EU AI Act: A Rule-Based Approach**
  Nimród Mike
  Hungary
- **Speeding up Government Procurement Workflows with LLMs**
  Aashna Sofat, Balwinder Sodhi
  India

Conferences & Workshops Program Schedule

15:30 – 17:00 • **Legal Definition Annotation in EU Legislation using Symbolic AI**
Asif Muhammad, Monica Palmirani
Italy

17.00 – 19.00 **Welcome Reception**
at Piazzale Tecchio building, University of Naples Federico II

DAY 2, Tuesday, 27 August 2024

Time	Track 1 Auditorium Scipione Bobbio (1st fl.)	Track 2 Aula C (2nd fl.)	Track 3 Aula D (2nd fl.)	Track 4 Aula E (2nd fl.)
08:00 – 09:00	Registration @ Foyer Auditorium Scipione Bobbio (1st fl.)			
09:00 – 10:30	**DEXA 7 Financial and Economic Data Analysis**	**DAWAK 5 Time Series**	**DEXA 8 Machine Learning and Large Language Models 1**	**EGOVIS 3 Open Government Data and Security**
10:30 – 11:00	Coffee break			
11:00 – 11:45	**DEXA 9 Recommender Systems and Personalization 1**	**DAWAK 6 Classification 2**	**DEXA 10 Database Indexing and Query Processing 1**	
11:45 – 12:30	Keynote Talk 3			
12:30 – 13:30	Lunch break			
13:30 – 15:00	**CIU**	**IWCFS**	**AISyS**	**EGOVIS 4 Mobile Government and Digital Inclusion**
15:00 – 15:30	Coffee break			
15:30 – 17:00	**DEXA 11 Blockchain and Supply Chain Management & Specialized Applications and Case Studies 1**	**DAWAK 7 Data Quality & Applications**	**DEXA 12 Specialized Applications and Case Studies 2**	**DAWAK 8 ML Methods and Applications 2 & Applications 2**
19:00 – 22:00	• **Conference Dinner** • **Norman Revell Award and Roland Wagner Award** @ the Borgo Marinaro in front of Castel dell'Ovo			

Tuesday, 27 August 2024

08:00 – 09:00 **Registration** •

09:00 – 10:30 **Parallel Session**
DEXA 7: Financial and Economic Data Analysis   Auditorium Scipione Bobbio (1st fl.)
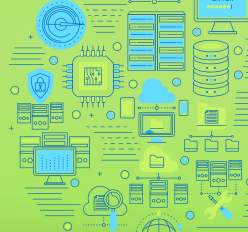**Session Chair: Qiang Ma**
• CSPRD: A Financial Policy Retrieval Dataset for Chinese Stock Market
Jinyuan Wang, Zhong Wang, Zeyang Zhu, Jinhao Xie, Yong Yu, Yongjian Fei, Yue Huang, Dawei Cheng, Hai Zhao
China

09:00 – 10:30
- **Leveraging Heterogeneous Text Data for Reinforcement Learning-based Stock Trading Strategies**
  Keishi Fukuda, Qiang Ma
  Japan
- **TCMIDP: A Comprehensive Database of Traditional Chinese Medicine for Network Pharmacology Research**
  Lei Ye, Wenxiang Liu, Yuhao Zheng, Jianhua Li
  China

DAWAK 5: Time Series   Aula C (2ⁿᵈ fl.)
Session Chair: Chiara Balestra
- **Series2Graph++: Distributed Detection of Correlation Anomalies in Multivariate Time Series**
  Phillip Wenig, Thorsten Papenbrock
  Germany
- **Anomaly Detection from Time Series under Uncertainty**
  Paul Wiessner, Grigor Bezirganyan, Sana Sellami, Richard Chbeir, Hans-Joachim Bungartz
  Germany, France
- **Comparison of Measures for Characterizing the Difficulty of Time Series Classification**
  Adam Charane, Matteo Ceccarello, Johann Gamper
  Italy
- **Dynamic Time Warping for Phase Recognition in Tribological Sensor Data**
  Anna-Christina Glock, Johannes Fürnkranz
  Austria

DEXA 8: Machine Learning and Large Language Models 1   Aula D (2nd fl.)
Session Chair: Shayma Alkobaisi
- **A Pre-trained Knowledge Tracing Model with Limited Data**
  Wenli Yue, Wei Su, Lei Liu, Chuan Cai, Yongna Yuan, Zhongfeng Jia, Jiamin Liu, & Wenjian Xie
  China
- **Chorus: More Efficient Machine Learning on Serverless Platform**
  Guang Yang, Jie Liu, Shuai Wang, Muzi Qu, Dan Ye, Hua Zhong
  China
- **Evaluating Performance of LLaMA2 Large Language Model Enhanced by QLoRA Fine-Tuning for English Grammatical Error Correction**
  Jing An, Yanbing Bai, Jiyi Li, Junjie Hu, Rui Li, Yuxi Xiao, Rui Hua
  China, japan

EGOVIS 3: Open Government Data and Security   Aula E (2ⁿᵈ fl.)
Session Chair: Gábor Klimkó
- **Enabling Lawful Interception in Environments Protected by IoT Safeguard**
  Aurelio Loris Canino, Gianluca Lax
  Italy
- **SDG Aligned Data Warehouse Implementation over Open Government Data**
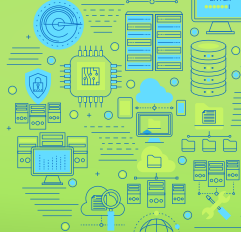 *Apurva Kulkarni, Srinath Srinivasa, Sanket Patil*
  India
- **Detection of structured fraud supported by shell companies on goods and services trading operations**
  Douglas Silva, Nádia Felix, Sergio Carvalho
  Brazil
- **Data Sharing Governance in Digital Twins and Smart Cities: The European Data Strategy**
  Salvatore Sapienza, Monica Palmirani, Sara Greco
  Italy

Conferences & Workshops Program Schedule

10:30 - 11:00	**Coffee Break**
11:00 - 11:45	**Parallel Session**

DEXA 9: Recommender Systems and Personalization 1 Auditorium Scipione Bobbio (1st fl.)
Session Chair: Su Wei
- **Collaborative Filtering for the Imputation of Patient Reported Outcomes**
  Eric Ababio Anyimadu, Clifton David Fuller, Xinhua Zhang, G Elisabeta Marai, Guadalupe Canahuate
  USA
- **Category-aware Sequential Recommendation with Time Intervals of Purchases**
  Jia-Ling Koh, Cheng-Wei Chen
  Taiwan

DAWAK 6: Classification 2 Aula C (2nd fl.)
Session Chair: Jose Alejandro Libreros
- **Incremental SMOTE with Control Coefficient for Classifiers in Data Starved Medical Applications**
  Wan D. Bae, Shayma Alkobaisi, Siddheshwari Bankar, Sartaj Bhuvaji, Jay Singhvi, Madhuroopa Irukulla, William McDonnell
  USA, UAE
- **Exploring Evaluation Metrics for Binary Classification in Data Analysis: the Worthiness Benchmark concept**
  Mohammad Shirdel, Mario Di Mauro, Antonio Liotta
  Italy

DEXA 10: Database Indexing and Query Processing 1 Aula D (2nd fl.)
Session Chair: Chiara Renso
- **Unlocking the Power of Diversity in Index Tuning for Cluster Databases**
  Haitian Hang, Xiu Tang, Bo Zhou, Jianling Sun
  China
- **SAFE: Sampling-assisted Fast Learned Cardinality Estimation for Dynamic Spatial Data**
  Yuchen Ji, Daichi Amagata, Yuya Sasaki, Takahiro Hara
  Japan

11: 45 – 12:30	**Keynote Talk 3**

Multimodal Deep Learning in Medical Imaging
Carlo Sansone, *Department of Electrical Engineering and Information Technology, University of Naples Federico II, Italy*
Session Chair: Toshiyuki Amagasa

12:30 – 13:30	**Lunch Break**
13:30 – 15:00	**Parallel Session**

CIU Workshop Auditorium Scipione Bobbio (1st fl.)
Session Chair: Anna Christina Glock & Michael Mayr
- **Uncertainty estimation of raters' performance and ground truth through a Bayesian extension of STAPLE**
  Davide Cazzorla, Corrado Mencar
  Italy
- **Uncertainty estimation for energy consumption nowcasting**
  Danel Rey-Arnal, Ibai Laña, Pablo G. Bringas
  Spain
- **Knowledge Guided Clustering Medieval Polychromy**
  Florian Sobieczky, Elisabeth Sobieczky
  Austria

Conferences & Workshops Program Schedule

13:30 – 15:00 **IWCFS Workshop**   Aula C (2nd fl.)

Session chair: Atif Mashkoor & Johannes Sametinger
- **Improve CPSoS Security: An enhanced Anomaly-based Intrusion Detection Architecture**
  Marco Stadler, Michael Riegler, Johannes Sametinger, Christoph Schönegger
  Austria
- **Assessing the Maturity of Blockchain-based Implementations with Software Reliability Growth Models**
  Muhammad Azeem, Saif Ur Rehman Khan, Atif Mashkoor, Abdullah Yousafzai, Habib Un Nisa
  Pakistan, Austria
- **An Automated Ontology-based Requirements Traceability Technique in Agile Software Development Context**
  Saif Ur Rehman Khan, Uswa Aslam, Atif Mashkoor, Irum Inayat, Habib Un Nisa
  Pakistan, Austria
- **Toward a Knowledge-Based Anomaly Identification System for Detecting Anomalies in the Smart Grid**
  Sarita Paudel, Abdelkader Magdy Shaaban
  Austria

AISys Workshop   Aula D (2nd fl.)

Session Chair: Bernhard Moser
- **On the Solvability of the XOR Problem by Spiking Neural Networks**
  Bernhard Moser, Michael Lunglmayr
  Austria
- **Risk Assessment in AI System Engineering: Experiences and Lessons Learned from a Practitioner's Perspective**
  Magdalena Fuchs, Lukas Fischer, Alessio Montuoro, Mohit Kumar, Bernhard Moser
  Austria
- **From Paper to Pixels: A Multi-Modal Approach to Understand and Digitize Assembly Drawings for Automated Systems**
  Raphael Seliger, Sebnem Gül-Ficici, Ulrich Göhner
  Austria

EGOVIS 4: Mobile Government and Digital Inclusion   Aula E (2nd fl.)

Session Chair: Silvia Lips
- **Facilitators and barriers of marginalized groups for the engagement in online civic activities**
  Otilia Kocsis, Eva de Lera, Michael A. Bedek, Maria Zangl, Radu Colt, Veronika Šaušová, Lucia Birasova
  Belgium, Austria, Romania, Slovakia
- **Towards a Unified Framework for Evaluating User Satisfaction with Mobile Government Apps: Insights from User Reviews**
  Nico Gießmann, Benedict Bender
  Germany
- **Adoption of AI-CRM for Public Value Creation**
  Hagar Gabay, Gideon Mekonnen Jonathan, Iris Reychav
  Sweden, Israel

15:00 – 15:30 **Coffee Break**
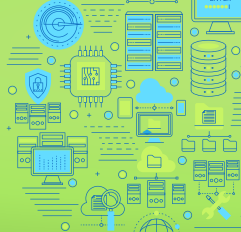
15:30 – 17:00 **Parallel Session**
DEXA 11:   - Blockchain and Supply Chain Management   Auditorium Scipione Bobbio (1st fl.)
                - Specialized Applications and Case Studies 1

Session Chair: Devis Bianchini
- **Towards Transparent and Ethical Coffee and Cocoa Supply Chains: Integrating Blockchain, Encrypted-RSA NFTs, and IPFS**

15:30 – 17:00   *Trung P.H.T., Bang L.K., Kha H. N., Bao Q.T., Trong N.D.P., Loc V.C.P, Hieu D.M., Khoa D.T.*
Vietnam
- **Resource-Oriented Approach for Effective Blockchain Integration in Intertwined Supply Chains**
Devis Bianchini, Valeria De Antonellis, Massimiliano Garda, Michele Melchiori
Italy
- **Fast Concept Drift Detection exploiting Product Quantization**
Taisei Takano, Hisashi Koga
Japan
- **A Novel Multi-Scale Spatiotemporal Graph Neural Network for Epidemic Prediction**
Zenghui Xu, Mingzhang Li, Ting Yu, Linlin Hou, Peng Zhang, Rage Uday Kiran, Zhao Li, Ji Zhang
Australia, China, Japan

DAWAK 7: Data Quality & Applications   Aula C (2nd fl.)
Session Chair: Anna-Christina Glock
- **NADA: NMF-based Anomaly Detection in Adjacency-Matrices for Industrial Machine Log-files**
Sabrina Luftensteiner, Patrick Praher, Nicole Schwarz
Austria
- **Trusting Fair Data: Leveraging Quality in Fairness-Driven Data Removal Techniques**
Manh Khoi Duong, Stefan Conrad
Germany
- **"The absence of evidence is not the evidence of absence": Fact Verification via Information Retrieval-based In-Context Learning**
Payel Santra, Madhusudan Ghosh, Debasis Ganguly, Partha Basuchowdhuri, Sudip Kumar Naskar
India, UK
- **Discovering Relationships Among Properties in Wikidata Knowledge Graph**
Emetis Niazmand, Maria-Esther Vidal
German
- **Using a Spatial Grid Model to Interpret Players Movement in Field Sports**
Valerio Antonini, Michael Scriney, Alessandra Mileo, Mark Roantree
Ireland

DEXA 12: Specialized Applications and Case Studies 2   Aula D (2nd fl.)
Session Chair: Christoph Stach
- **LALO—A Virtual Data Lake Zone for Composing Tailor-Made Data Products on Demand**
Christoph Stach, Yunxuan Li, Laura Schuiki, Bernhard Mitschang
Germany
- **Intermediate Hidden Layers for Legal Case Retrieval Representation**
Eya Hammami, Mohand Boughanem, Rim Faiz, Taoufiq Dkaki
France, Tunisia
- **Geometric features and GAT neural network for protein surface classification**
Wissam Ferroudj, Noura Faci, Hamamache Kheddouci
France

DAWAK 8: - ML Methods and Applications 2   Aula E (2nd fl.)
**   - Applications 2**
Session Chair: Michael Mayr
- **Ada2vec: Adaptive Representation Learning for Large-Scale Dynamic Heterogeneous Networks**
Ranran Bian, R. Willem Vervoort
Australia
- **Differentially-Private Neural Network Training with Private Features and Public Labels**
Islam A Monir, Gabriel Ghinita
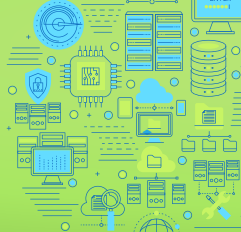*Qatar*

Conferences & Workshops Program Schedule

15:30 – 17:00
- **A Study on Database Intrusion Detection Based on Query Execution Plans**
  Tadeusz Morzy, Maciej Zakrzewicz
  Poland
- **Visual Transformers Meet Convolutional Neural Networks: Providing Context for Convolution Layers in Semantic Segmentation of Remote Sensing Photovoltaic Imaging**
  Jose Alejandro Libreros, Muhammad Hamza Shafiq, Edwin Gamboa, Martin Cleven, Matthias Hirth
  Germany

19:00 – 22:00   **Conference Dinner**
at the Borgo Marinaro in front of Castel dell'Ovo

DAY 3, Wednesday, 28 August 2024

Time	Track 1 Auditorium Scipione Bobbio (1st fl.)	Track 2 Aula C (2nd fl.)	Track 3 Aula D (2nd fl.)	Track 4 Aula E (2nd fl.)
08:00 – 09:00	**Registration** @ Foyer Auditorium Scipione Bobbio (1st fl.)			
09:00 – 10:30	**DEXA 13** **Recommender Systems and Personalization 2**	**DAWAK 9** **Optimization**	**DEXA 14** **Machine Learning and Large Language Models 2**	**DAWAK 10** **Entity Matching & Similarity**
10:30 – 11:00	**Coffee break**			
11:00 – 12:30	**DEXA 15** **Data Mining and Knowledge Discovery**	**DAWAK 11** **Data Repositories & Applications**	**DEXA 16** **Database Indexing and Query Processing 2**	
12:30 – 13:00	Room: Auditorium Scipione Bobbio (1st fl.) **CLOSING**			
13:00 – 14:00	**Lunch**			

Wednesday, 28 August 2024

08:00 – 09:00   **Registration**

09:00 – 10:30   **Parallel Session**
DEXA 13: Recommender Systems and Personalization 2   **Auditorium Scipione Bobbio (1st fl.)**
Session Chair: Giuseppe Manco
- **A Soft Actor-Critic Algorithm for Sequential Recommendation**
  Hyejin Hong, Yusuke Kimura, Kenji Hatano
  Japan
- **An Approach for Social-Distance Preserving Location-Aware Recommender Systems: A Use Case in a Hospital Environment**
  Marcos Caballero, María del Carmen Rodríguez-Hernandez, Raúl Parada, Sergio Ilarri, Raquel Trillo-Lado, Ramón Hermoso, Óscar J. Rubio
  Spain

Conferences & Workshops Program Schedule

09:00 – 10:30   **DAWAK 9: Optimization**   Aula C (2nd fl.)
Session Chair: Laura Erhan
- **Effective Reward Schemes for Tardiness Optimization**
  Lihi Idan
  USA
- **A Novel Technique for Query Plan Representation Based on Graph Neural Nets**
  Baoming Chang, Amin Kamali, Verena Kantere
  Canada
- **FairMC – fair Markov Chain rank aggregation methods**
  Chiara Balestra, Antonio Ferrara, Emmanuel Müller
  Germany
- **LSiX: A Scheme for Efficient Multiple Continuous Window Aggregation over Streams**
  Shun Kawakami, Savong Bou, Toshiyuki Amagasa
  Japan

       DEXA 14: Machine Learning and Large Language Models 2   Aula D (2nd fl.)
Session Chair: Jianhua XU
- **A Label Embedding Algorithm Based on Maximizing Normalized Cross-covariance Operator**
  Yulin Xue, Yuchen Pan, Tao Peng, Jun Li, Jianhua Xu
  China
- **Analyzing the Efficacy of Large Language Models: A Comparative Study**
  Sonia Khetarpaul, Dolly Sharma, Shreya Sinha, Aryan Nagpal, Aarush Narang
  India
- **Leveraging Large Language Models for Flexible and Robust Table-to-Text Generation**
  Ermelinda Oro, Luca De Grandis, Francesco Maria Granata, Massimo Ruffolo
  Italy

       DAWAK 10: Entity Matching & Similarity   Aula E (2nd fl.)
Session Chair: Valerio Antonini
- **MultiMatch: Low-Resource Generalized Entity Matching Using Task-Conditioned Hyper adapters in Multitask Learning**
  John Bosco Mugeni, Steven Lynden, Toshiyuki Amagasa, Akiyoshi Matono
  Japan
- **Embedding-based data matching for disparate data sources**
  Nour Elhouda Kired, Franck Ravat, Jiefu Song, Olivier Teste
  France
- **Subtree Similarity Search Based on Structure and Text**
  Takuya Mizokami, Savong Bou, Toshiyuki Amagasa
  Japan

10:30 – 11:00   **Coffee Break**

11:00 – 12:30   **Parallel Session**
       DEXA 15: Data Mining and Knowledge Discovery   Auditorium Scipione Bobbio (1st fl.)
Session Chair: A Min Tjoa
- **GADEC: Discovering Abnormal Citation Groups Based on Enhanced Local Community Expansion and DQN**
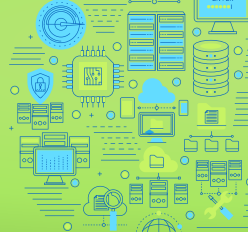 *Yan Zhu, Xiaofei Wang, Xinrui Lin, Yiqiang Peng*
  China
- **Knowledge Graph Creation and Management Made Easy with KGraphX**
  Ahmad Hemid, Abderrahmane Khiat, Megha Jayakumar, Christoph Lange, Christoph Quix, Stefan Decker
  Germany

Conferences & Workshops Program Schedule

11:00 – 12:30   • **SEMANT - Feature Group Selection Utilizing FastText-based Semantic Word Grouping, Scoring, and Modeling Approach for Text Classification**
Daniel Voskergian, Burcu Bakir-Gungor, Malik Yousef
Palestine, Turkey, Israel

DAWAK 11: Data Repositories   Aula C (2nd fl.)
Session Chair: Maciej Zakrzewicz
• **Putting Co-Design-Supporting Data Lakes to the Test: An Evaluation on AEC Case Studies**
Melanie Herschel, Andreas Gienger, Anja P. R. Lauer, Charlotte Stein, Lior Skoury, Nico Lässig, Carsten Ellwein, Alexander Verl, Thomas Wortmann, Cristina Tarin Sauer
Germany
• **Creating and Querying Data Cubes in Python using pyCube**
Sigmundur Vang, Christian Thomsen, Torben Bach Pedersen
Denmark
• **An e-commerce benchmark for evaluating performance trade-offs in document stores**
Dimitri Van Landuyt, Marie Levrau, Vincent Reniers, Wouter Joosen
Belgium
• **Open-Source Drift Detection Tools in Action: Insights from Two Use Cases**
Rieke Müller, Mohamed Abdelaal, Davor Stjelja
Germany, Finland

DEXA 16: Database Indexing and Query Processing 2   Aula D (2nd fl.)
Session Chair: Ismail Khalil
• **Lightweight Latches for B-trees to Cope with High Contention**
Amir El-Shaikh, Bernhard Seeger, Eljas Soisalon-Soininen
Finland
• **R-DiP: Re-ranking based Diffusion Pre-computation for Image Retrieval**
Tatsuya Kato, Takahiro Komamizu, Ichiro Ide
Japan
• **Extension of Parallel Primitives and Their Applications to Large-Scale Data Processing**
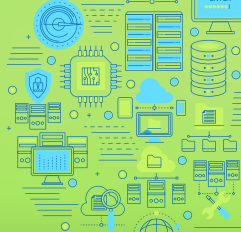*Masashi Nakano, Qiong Chang, Jun Miyazaki*
Japan

12: 30 – 13:00   **Closing**

13: 00 – 14:00   **Lunch**

VENUE & ROOM INFORMATION:

Venue: Piazzale Tecchio Building, Fuorigrotta - Università degli Studi di Napoli Federico II
Piazzale Vincenzo Tecchio, 80, 80125 Napoli NA, Italy
(Università degli Studi di Napoli Federico II - "Scuola Politecnica e delle Scienze di Base")

Meeting Room:
• Plenary and Track 1 sessions: Auditorium Scipione Bobbio (1st floor)
• Track 2 sessions: Aula C (2nd floor)
• Track 3 sessions: Aula D (2nd floor)
• Track 4 sessions: Aula E (2nd floor)

• Registration desk & Coffee break: Foyer Auditorium Scipione Bobbio (1st floor)
• Lunch: Piazzale Tecchio building, ground fl.

• Welcome Reception @ Piazzale Tecchio building, University of Naples Federico II
• Conference Dinner @ The Borgo Marinaro in front of Castel dell'Ovo

Social Events

Welcome Reception
Monday, 26 August 2024, 17:00 - 19:00 at Piazzale Tecchio building, University of Naples Federico II

After the first day sessions finished, all participants of DEXA 2024 are invited to a welcome reception. The gathering will take place at the Piazzale Tecchio building outdoor, offering an ideal opportunity to network, relax and unwind the late summer warmth. Drinks and light snacks will be served from *17:00 - 19:00*.

Conference Dinner
Tuesday, 27 August 2024, 19:00-22:00 at the Borgo Marinaro in front of Castel dell'Ovo

On the second day of DEXA2024, all participants are invited to a special Conference Dinner at a renowned restaurant located in the beautiful Borgo Marinaro, nestled at the base of the historic Castel dell'Ovo with a stunning view of the old harbor.
This location offers a delightful panorama of the castle on one side and the sea on the other, making it a favorite spot for locals to indulge in delectable, fresh food.

The restaurant is conveniently located approximately 35 minutes away from the conference venue by metro or bus. Detailed instructions on transportation to Borgo Marinaro from the conference venue will be provided soon.

DEXA 2024

Conferences & Workshops