IEEE Smart Cities

9th **IEEE International Smart Cities Conference**

Smart Cities: a Holistic Approach

CONFERENCE PROGRAM

24 – 27 September 2023, Bucharest, Romania

SMART CITIES: A HOLISTIC APPROACH

Welcome from Conference Chairs

On behalf of the Organizing Committee of the 9th IEEE International Smart Cities Conference, we welcome all delegate and visitors to Bucharest.

The National University of Science and Technology POLITEHNICA Bucharest, the largest and most important university in the engineering field, has the honor and pleasure to salute and welcome the most important conference in the smart cities respectively 2023 IEEE International Smart Cities Conference (ISC2 2023). ISC2 2023 welcomes all participants to Bucharest, Romania.

The IEEE International Smart Cities Conference is the flagship IEEE Smart Cities event and has established a strong reputation of the last years. The event will allow participants to have a holistic approach for realizing smart cities requiring a sustainable development, smart infrastructures and social inclusions, as well as establishing new relevant priorities for Smart Cities.

We sincerely thank the Steering Committee of the IEEE ISC2 for the encouragement and support provided over the last few years to hold this conference at National University of Science and Technology POLITEHNICA Bucharest and feel very honored by the recognition they have demonstrated towards our activities.

Our sincere gratitude is offered to the members of the Technical Review Committee who have worked tirelessly to review the papers.

We sincerely thank the National University of Science and Technology POLITEHNICA Bucharest and the participants from the faculties and departments, for the support provided for the preparation, organization and good development of the Conference.

We also wish to thank the Organizing Committee for their efforts in the numerous tasks always required for such an event. We are sure that they will continue to do their best during your stay to render it a pleasant memory.

The support provided by Ministry of Research, Innovation and Digitalization, UEFISCDI, ANRE and ICI are greatly appreciated.

Sincere thanks to all Authors and Panelists that made this conference possible through their interesting papers.

We hope you will find the conference stimulating and enjoyable, have a memorable time in Romania and have the opportunity to renew old friendships and make new ones.

Mihnea COSTOIU
George Cristian LĂZĂROIU

CONTENT

ISC2 2023 Committee

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Panel Chairs	Dragoș NICULAE, Diana ROBESCU
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ISC2 2023 Special Tracks Committee

Track 1 **Integrating Critical Infrastructures in Smart Cities**
Vasile DÂNCU, *University of Bucharest, Romania* *(Chair)*
Nina DAVID, *University of Delaware, USA*
Pierluigi SIANO, University of Salerno, Italy

Track 2 **Smart Education and Multidisciplinary Analysis**
Adrian CURAJ, *UEFISCDI, Romania* *(Chair)*
Maria Teresa Correia de BARROS, *University of Lisbon, Portugal*
Dario ZANINELLI, *Politecnico di Milano, Italy*

Track 3 **Smart Transportation**
Cornel PANAIT, *Maritime University of Constanta, Romania* *(Chair)*
Ilona COSTEA, *University POLITEHNICA of Bucharest, Romania*
Luigi MARTIRANO, *Sapienza University of Rome, Italy*

Track4 **Smart Health**
Cătălina POIANĂ, *Carol Davila University of Medicine and Pharmacy, Romania* *(Chair)*
Alexandru GRUMEZESCU, *University POLITEHNICA of Bucharest, Romania*

Track 5 **Smart Energy Systems**
Viorel BĂDESCU, *Romanian Academy, Romania* *(Chair)*
Constantin BULAC, *University POLITEHNICA of Bucharest, Romania*
Ghanim PUTRUS, *Northumbria University, UK*

Track 6 **IoT and Smart X Services**
Soteris KALOGIROU, *Cyprus University of Technology, Cyprus* *(Chair)*
Valeriu STERIU, *ANRE, Romania*
Sule YAYILGAN, *University of Science and Technology, Norway*

Track 7 **Advanced applications and data analysis for smart cities**
Marius STAN, *Argonne Laboratory, USA* *(Chair)*
Matti LEHTONEN, *AAlto University, Finland*
Adrian VEVERA, *ICI, Romania*

Track 8 **New habitats in smart cities**
Gigel PARASCHIV, *University POLITEHNICA of Bucharest, Romania* *(Chair)*
Fariborz HAGHIGHAT, *Concordia University, Canada*
Valentin VLĂDUȚ, *INMA, Romania*

IEEE Smart Cities Committee Chairs

Committee	Chair
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Education Committee	Wei-Jen Lee
Conferences Advisory Committee	Yacine Ghamri-Doudane
Marketing Committee	Larissa Paredes Muse
Publications Committee	Loi Lei Lai
Technical Activities Committee/R&D	Amro Farid

General Information

Conference Venue

National University of Science and Technology POLITEHNICA Bucharest, Library Center

Splaiul Independentei Street, no. 313
060042 Bucharest, Romania

Senate Room – Rectorate Hall

Rooms 2.1, 2.2, 2.3 – Library Center 2nd floor
Council Room – Library Center 2nd floor
Room 3.1 – Library Center 3rd floor

Delegates and accompanying persons will be issued with name badges which must be worn during the conference and social events. Entrance to various conference sessions and activities will be strictly through registration only.

THE LIBRARY CENTER

RATB "Politehnica" 601

Dâmbovița

Splaiul Independenței

RECTORATE

Metrou Grozăvești

CJ   CA

IMST

CB

CO (subsol)   CD

IMM

Biblioteca

CI   CH   CG   CG   CE

CF

ISB

D   CK

ȘA

SIM

AIMA   BN

ILS

JK   JL

JB   JA

JC   JD

JE

JF   JG   JH

Tr

Sala de sport

FA   FB

AN

R

EM   ELa

ENb   ENa
ENc

En   EH

EJ   El

EG

EA   IE

EB

EC

AC   ED   EF

Bulevardul Vasile Milea

Metrou Politehnica

RATB "Iuliu Maniu" 1, 11 ,35

Metrou Politehnica

Acces Bd. Iuliu Maniu

RATB "UPB" 61, 62, 136, 236, 336

Morning and Afternoon Coffee / Tea Break

Morning and afternoon coffee/tea break will be provided at the locations mentioned in the program.

Buffet lunch will be provided in the UPB Library Center.

SOCIAL EVENTS

Welcome Cocktail Reception – will be held at the UPB Rectorate Hall **Sunday 24th of September starting from 18:30.**

Gala dinner – will be held on **Tuesday 26th of September at the Caru cu Bere Restaurant** (Street Stavropoleos 5, Bucharest 030081) **starting from 18:30.**
The dinner will present typical local Romanian dishes.

Smoking Policy
According to the Romanian law it is not allowed any smoking inside the buildings.

NO SMOKING

Guidelines for Authors and Presenters

The oral presentations at ISC2 2023 have to be prepared and delivered in English. Presenters will be required to provide their presentations (USB drive format) to the conference support staff located into the conference rooms 15 minutes before the session starting. Presentations should be of 'PowerPoint' or PDF style for delivery via data projector. Computer and projection facilities will be available at the conference venue. Each paper presentation will have equal duration, comprising the questions and answers. Session Chairs will strictly enforce presentation durations.

Program at a glance

Sunday, 24 September, 2023

17:30 – 18.30 Central Library	ISC2 2023 Registration
18:30 – 20:00 Rectorate	Welcome Reception

Monday, 25 September, 2023

09:00 – 10:00 Rectorate	ISC2 2023 Registration
10:00 – 11:00 Rectorate Senate Room	**Opening Ceremony**
11:00 – 11:30 Rectorate	Coffee Break
11:30 – 12:30 Rectorate Senate Room	KA1 - *"Toward to "Lighting 4.0" era, the SSL2 (Sustainable Smart Lighting x Solid State Light sources) concept"*, by Professor Georges ZISSIS, *Toulouse 3 University, France* KA2 - *"AI-Assisted Material Design for Smart Cities"* by Professor Marius Stan, *Argonne National Laboratory and Associate Professor at the University of Chicago and Northwestern University, USA*
12:30 – 13:30 Central Library	Lunch (Central Library, 4th floor)

13:30 – 15:00	Paper Presentation Session 1 / Workshops				
Central Library	1A	1B	1C	WS-SCS	WS - FOL
Room	2.1.	2.2.	2.3.	3.1.	Council

15:00 – 15:30 Central Library	Coffee Break (Central Library, 4th floor)				

15:30 – 17:00	Paper Presentation Session 2 / Workshops				
Central Library	2A	2B	2C	WS-SCS	WS-WiE
Room	2.1.	2.2.	2.3.	3.1.	Council

Tuesday, 26 September, 2023

09:00 – 09:30	ISC2 2023 Registration

09:30 – 11:00	Paper Presentation Session 3 / Panel / Workshop		
Central Library	3A	3B	WS Improving
Room	2.1.	2.2.	2.3.

11:00 – 11:30	Coffee Break (Central Library 4th floor)
11:30 – 12:30 Central Library Room 2.1.	*KA3 - "The Role of Energy Communities in the Energy Transition Towards Smart and Sustainable Cities"* by Professor Pierluigi SIANO, *University of Salerno, Italy* *KA4 - "Data Driven City Specific Engagements and Technology enablement for combating Climate Change issue"* by Dr. Mrs. Surekha Deshmukh, *Domain Consultant, Sustainability Practice, TCS, Pune, India*
12:30 – 13:30	Lunch (Central Library 4th floor)

13:30 – 15:00	Paper Presentation Session 4 / Panel / Workshop		
Central Library	4A	Panel	WS Improving
Room	2.1.	2.2.	2.3.

18:30 – 22:00	**Gala Dinner (Caru cu Bere Restaurant)**

Wednesday, 27 September, 2023

09:00 – 09:30 Central Library	ISC2 2023 Registration

09:30 – 11:00	Paper Presentation Session 5 / Panel		
Central Library	5A	5B	WS Decarbonization
Room	2.1.	2.2.	Council

11:00 – 11:30	Coffee Break (Central Library 4th floor)

11:30 – 13:00	Paper Presentation Session 6		
Central Library	6A	6B	6C
Room	2.1.	2.2.	2.3.

13:00 – 14:00 Central Library	**Closing Ceremony** (Room 2.1.)

Keynote Address Details

"Toward to «Lighting 4.0» era, the SSL2 (Sustainable Smart Lighting x Solid State Light sources) concept"

by Professor Georges ZISSIS, Toulouse 3 University, France

During the last decade, SSLs-Solid-State Lighting based on components like LEDs, OLEDs and LDs, challenges conventional technologies. In particular, LED has turned into a game changer beating the conventional technologies in all aspects. It is therefore anticipated that in short term, all of electric lighting will be based on SSLs. Today, SSLs proceed to the projected conclusion: replacing all legacy technologies, this is a major change in the lighting market that is considered as a revolution. Artificial light absorbs 13-14% of the world's electricity annual production. Today, we are witnessing a transition from the conventional *"analogue"* lighting technologies towards *"digital"* lighting. Smart lighting will become the backbone for smart cities and homes. Smart lighting concept leads towards the heart of the *"Internet of Things"*. Further, to serve society as effectively as we could, Industry has coined a new term *"human-centric lighting"* (HCL) to direct its primary efforts in meeting human needs. The objective is switching to smart human-centric lighting driven by both *"efficiency"* and *"quality of light"*. But this forecast could be severely affected by the *"rebound effect"* described by Jevons in mid-19th century. Switching to the SSL2 concept, which consists of sustainable smart lighting systems based on solid-state lighting devices, might be one way to stop that harmful effect. Smart, human-centered lighting that incorporates light quality is driven by *"appliance efficiency."* This merely suggests that the *"Right Light"* should be provided by next-generation lighting systems with the best levels of quality and efficiency when and where it is needed.

This keynote will highlight all the above-mentioned issues and will focus on the future of the lighting systems and their contributions to the sustainable development of smart cities.

Professor Georges ZISSIS, PhD, SMIEE, Vice-Rector Toulouse 3 University (2020-23). Born in Athens in 1964, has graduated in 1986 from Physics department of University of Crete in general physics. He got his MSc and PhD in Plasma Science in 1987 and 1990 from Toulouse 3 University (France). He is today full Professor in Toulouse 3 University (France). His primary area of work is in the field of Light Systems Science and Technology. He is especially interested in the sustainable smart lighting systems; system and metrology issues for solid-state lighting systems; standardization and quality issues for light sources; impact of lighting to energy, environment, quality of life, health and security; illumination and lighting. He is director of *"Light & Matter"* research group of LAPLACE that enrols 20 researchers. He won in December 2006 the 1st Award of the International Electrotechnical Committee (IEC) Centenary Challenge for his work on mesopic vision standardization for urban lighting systems (in conjunction with IEEE, IET and the Observer). In 2009, he won the Energy Globe Award for France and he got the Fresnel Medal from the French Illuminating Engineering Society. He was President IEEE Industrial Application Society (2019-20), and President of the Power Electronics, Electronics, Optoelectronics and System section of the French National Council of Universities (2014-19). He initiated and he chairs the IEEE Smart Lighting Initiative under IEEE Future Directions umbrella.

"AI-Assisted Material Design for Smart Cities"

by Professor Marius STAN,
Argonne National Laboratory and Associate Professor at the University of Chicago and Northwestern University, USA

Designing improved materials and processes requires a comprehensive evaluation of data and model quality. With the volume, variety and rate of data generation continuously increasing, human analysis becomes extremely difficult, if not impossible. In this talk, the concept of "intelligent software" is discussed. The software includes elements of Artificial Intelligence such as machine learning and computer vision, coupled with reduced-order modeling and Bayesian statistics. The value of the approach is illustrated using examples of material design of battery electrodes and computer memory for smart city applications. The results show that the machine learning algorithm reduces the design time and effort by a factor of 10 – compared to quantum mechanical calculations – while maintaining accuracy. The intelligent program finds the optimal inter-atomic potential and crystal structure improving the material properties. Furthermore, a discussion of current and future applications of AI demonstrates that

the human-machine partnership can positively impact the intelligent design of smart cities.

Dr. Marius Stan is a scientist and author in Chicago, U.S.A. He obtained his bachelor's degree in physics from the University of Bucharest and his PhD in chemistry from the Institute of Physical Chemistry of the Romanian Academy. After moving to the U.S. in 1997, Dr. Stan was a Senior Scientist at Los Alamos National Laboratory. In 2010 he moved to Chicago as Senior Scientist at Argonne National Laboratory and Associate Professor at the University of Chicago and Northwestern University. From 2013 to 2015 he was National Director of Advanced Modeling and Simulation at the U.S. Department of Energy, during the Obama administration. Dr. Stan uses artificial intelligence (AI) and high-performance computer simulations to understand and predict the properties of complex systems with applications in energy, material design and electronics. He has extensively published in scientific literature and holds several patents. In 2021 he decided to devote himself to personal projects centered on the use of artificial intelligence in science, technology, and art. Dr. Stan is currently writing a book on human and artificial intelligence.

"The Role of Energy Communities in the Energy Transition Towards Smart and Sustainable Cities"
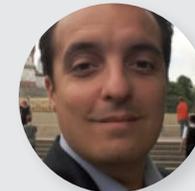
by Professor Pierluigi SIANO,
University of Salerno, Italy

Facilitated by experimentations, such as the ones of energy communities, new actors are emerging with the role of aggregators and other intermediaries acting as service providers. Furthermore, looking at the multiplicity of actors' roles deriving from the energy transition, the shift underway in energy access is resulting in electricity consumers becoming prosumers, i.e., consumers who are also producers of renewable energy and who use that energy more intelligently and efficiently. In other words, citizens are starting to become less dependent on energy companies. The design of new distributed architectures and methods able to cope with the issue of scalability in smart grids and microgrids consisting of several distributed energy resources is fundamental. A novel scalable and privacy-preserving distributed parallel optimization that allows the participation of large-scale aggregation of prosumers with residential PV-battery systems in the market for the ancillary services is proposed. To consider both reserve capacity and reserve energy, day-ahead and real-time stages in the ASM are considered. The proposed LP-based optimization can be easily coded up and implemented on microcontrollers and connected to a designed Internet of Things (IoT)

based architecture. Both day-ahead and real-time proposed optimization methods, by allocating the computational effort among local resources, are highly scalable and fulfil the privacy of prosumers.

Professor Pierluigi SIANO received the M.Sc. degree in electronic engineering and the Ph.D. degree in information and electrical engineering from the University of Salerno, Salerno, Italy, in 2001 and 2006, respectively. He is a Professor and Scientific Director of the Smart Grids and Smart Cities Laboratory with the Department of Management & Innovation Systems, University of Salerno. Since 2021 he has been a Distinguished Visiting Professor in the Department of Electrical & Electronic Engineering Science, University of Johannesburg. His research activities are centered on demand response, energy management, the integration of distributed energy resources in smart grids, electricity markets, and planning and management of power systems. In these research fields, he has co-authored more than 700 articles including more than 410 international journals that received in Scopus more than 18000 citations with an H-index equal to 65. In the period 2019-2022 he has been awarded as a Highly Cited Researcher in Engineering by Web of Science Group. He has been the Chair of the IES TC on Smart Grids. He is Editor for the Power & Energy Society Section of IEEE Access, IEEE TRANSACTIONS ON POWER SYSTEMS, IEEE TRANSACTIONS ON INDUSTRIAL INFORMATICS, IEEE TRANSACTIONS ON INDUSTRIAL ELECTRONICS, IEEE SYSTEMS.
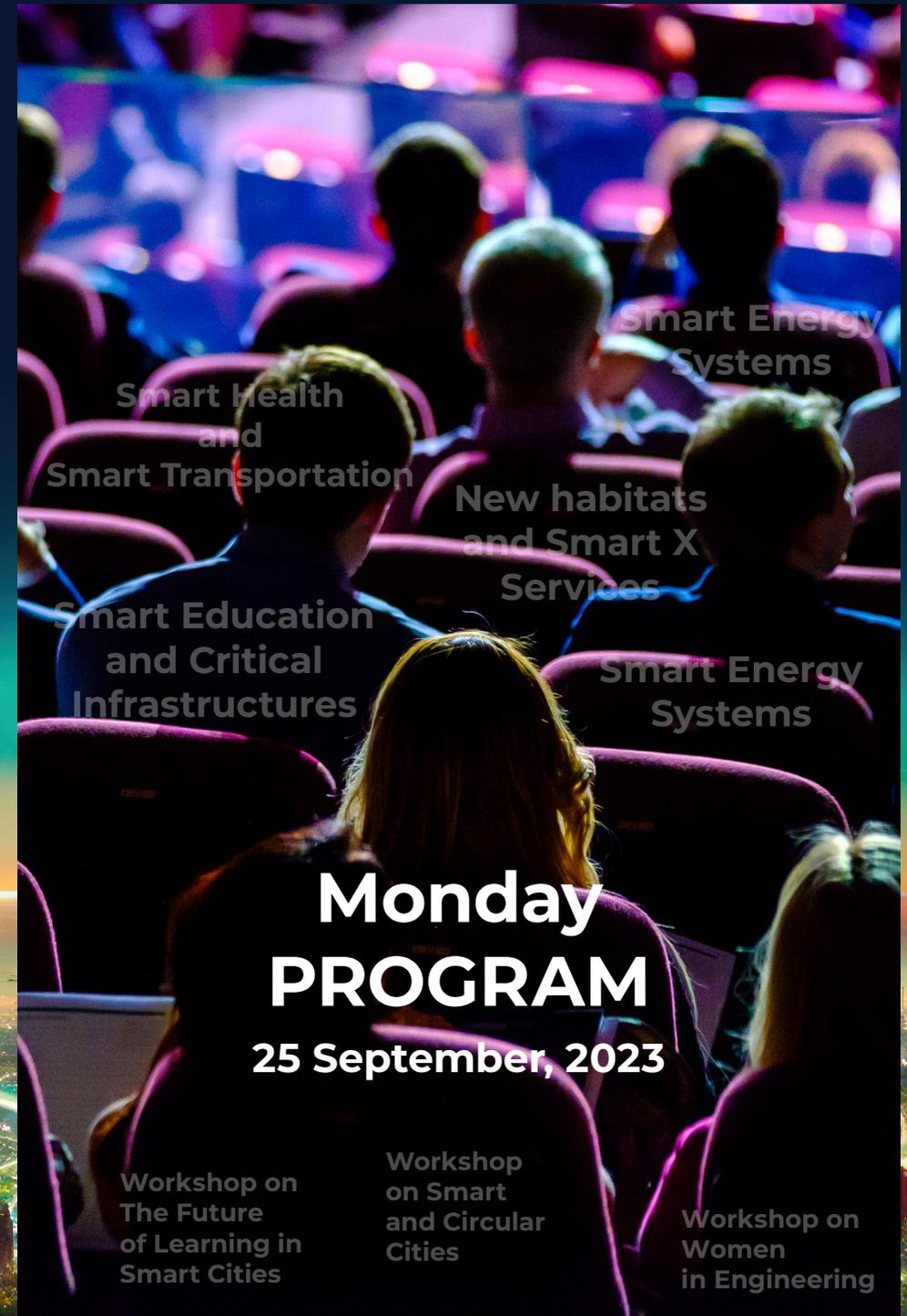
"Data Driven City Specific Engagements and Technology enablement for combating Climate Change issue"

by Dr. Mrs. Surekha DESHMUKH,
Domain Consultant,
Sustainability Practice,
TCS, Pune, India

Topic revolves around the city specific action plan for combating climate change and achieve sustainable development goals aligned to city. Looking at the global adaptation towards decarbonization, energy transition, there is huge potential to apply bottom-up approach at cities. The active involvement of citizen, city authorities, NGOs, industry , schools , colleges etc into the movement of making city livable, clean, green and healthy. The keynote would cover the detailed examples of data and technology enablement in developing solutions to address city specific issues and concerns. Also, examples would demonstrate critical role of IEEE in responding to climate change.

Dr. Mrs. Surekha Deshmukh has over 22 plus years of professional experience. Her current role is Domain Consultant, Sustainability Practice, TCS, Pune. Dr Surekha is senior member of IEEE and Chair of IEEE Pune Section and Chair- PES India Chapters Council. She also serve as a Member of IEEE's Climate Change Committee (CCIRCC) and chair of Sub Committee of CCIRCC–Global Visibility. She has published 35 papers tills date on areas of interest are Sustainability, Climate Change, Artificial Intelligence and Data Analytics, Electrical Safety, Electric Vehicles, Power Market, Power System Operation and Control, Reliability Analysis and Smart Grid. Dr Surekha is awarded with " Outstanding Volunteer Award" of IEEE India Council-2020, Women in Power Award-2021, IEEE PES Outstanding Engineer Award 2022. Women In Engineering Recognition by IEEMA-from ELECRMAMA in Feb 2023. Dr Surekha remarkably contributed at global IEEE events as Resource person, Tutorial speaker, keynote speaker, Session chair, Panelist etc.

Smart Energy Systems

Smart Health and Smart Transportation

New habitats and Smart X Services

Smart Education and Critical Infrastructures

Smart Energy Systems

Monday PROGRAM
25 September, 2023

Workshop on The Future of Learning in Smart Cities

Workshop on Smart and Circular Cities

Workshop on Women in Engineering

Smart Energy Systems

Monday 13³⁰ – 15⁰⁰   Room: 2.1.

CHAIRS: Yilu Liu, *University of Tennessee Knoxville, USA*
         Horia Necula, *POLITEHNICA Bucharest, Romania*

#27   **Optimal heat recovery and electricity production from a proton exchange membrane fuel cell's operation**
Juan Siecker, Kanzumba Kusakana,
Central University of Technology, South Africa

#32   **Flexible Boundary Design for a Chattanooga Microgrid Powered by Landfill Solar Photovoltaic and Battery Storage**
Samuel Okhuegbe, Chengwen Zhang, Dong Jiaojiao, Yilu Liu,
University of Tennessee Knoxville, USA
Austin Walker, Jim Glass,
Electric Power Board of Chattanooga, USA

#34   **Modeling local energy markets transactions for multi-energy systems in low-voltage unbalanced distribution networks**
Fernando Garcia-Munoz,
Catalonia Institute for Energy Research, Spain
Andrés Cortés, Amaia González-Garrido,
TECNALIA, Spain

#40   **Energy sharing strategies in a Citizen Energy Community including vulnerable consumers**
Mariana Jimenez, Albert Farriol, Lucia Igualada, Cristina Corchero,
Catalonia Institute for Energy Research, Spain

#48   **Towards Sustainable Mobility: An Optimization-based Approach for Smart EV Charging Reducing Grid and Environmental Impact**
Andres Cortes, Amaia Gonzalez-Garrido, Maider Santos-Mugica,
TECNALIA, Spain

#59   **Office Building Energy Community: A Case Study on Optimal Market Operation and Grid Impact**
Juhani Lepisto, Pirjo Heine,
Helen Electricity Network, Finland
Jovana Forcan, Miodrag Forcan,
University of East Sarajevo, Bosnia and Herzegovina

Smart Education and Critical Infrastructures

Monday 13³⁰ – 15⁰⁰   Room: 2.2.

CHAIRS: Daniel Costa, *University of Porto, Portugal*
         Claudia Popescu, *POLITEHNICA Bucharest, Romania*

#29   **Enhancing the computation of risk zones based on emergency-related infrastructure in smart cities**
Joao Paulo Peixoto, *Federal Institute of Bahia, Brazil*
Daniel Costa, Paulo Portugal, Francisco Vasques,
University of Porto, Portugal
Washington Rocha, *State University of Feira de Santana, Brazil*

#104   **A Typical Buildings Approach to Modelling Urban Energy Systems**
Daniel Bishop, Wentao Wu, Larry Bellamy,
University of Canterbury, New Zealand

#17   **Remote Lab motor-generator using LabVIEW and Google cloud**
Nicolaas Luwes, Johan Raath, Herman Vermaak,
Central University of Technology, South Africa
Walter Commerell, Lukas Hienle,
Technische Hochschule Ulm, Germany

#106   **Dynamic Sensor Configuration for Multi-target Emergency Detection in Smart Cities**
Joao Carlos N. Bittencourt,
Federal University of Reconcavo da Bahia, Brazil
Daniel Costa, Paulo Portugal, *University of Porto, Portugal*

#19   **Graphon-based Synthetic Power System Model and its Application in System Risk Analysis**
Rachad Atat, *Texas A&M University at Qatar, Qatar*
Muhammad Ismail, *Tennessee Technological University, USA*
Erchin Serpedin, *Texas A&M University, USA*

#109   **An Secure OTA Approach For Flexible Operation of Emergency Detection Units in Smart Cities**
Gustavo Falcao da Silva, Thiago C. de Jesus,
State University of Feira de Santana, Brazil
Daniel Costa, *University of Porto, Portugal*

New habitats and Smart X Services

Monday 13³⁰ – 15⁰⁰ Room: 2.3.

CHAIRS: Anastasia Semenyuk,
Fraunhofer Institute for Factory, Germany
Mihai Octavian Popescu,
POLITEHNICA Bucharest, Romania

**#30 Interdisciplinary Urban Planning in VR:
Virtual Twins for Sustainable Urban Development**
Anastasia Semenyuk, Andreas Hopfner, Alessandro Lombardi,
Marc Richter, *Fraunhofer Institute for Factory, Germany*
Stefan Sturing, *LS Software & Engineering GmbH, Germany*
Przemyslaw Komarnicki,
Wroclaw University of Science and Technology, Germany

#69 Smart City as a place to pray
Jan Kazmierczak, Bartolomiej Knosala,
Silesian University of Technology, Poland

**#125 A Systematic Mapping Study on the Role of
Software Engineering in Enabling Society 5.0**
Vladana Celebic, Alessio Bucaioni, *Malardalen University, Sweden*

**#25 Transfer Learning-Enabled IoT System for Continuous
Prediction of Vehicle CO2 Concentration**
Mohammad AlSelek, David Tena-Gago, Jose M. Alcaraz-Calero,
Qi Wang, *University of the West of Scotland, UK*

**#37 Smart Heritage Preservation Through Open Data,
Crowdsourcing, and Contextual Light Apps**
Martin Alvarez-Espinar,
Huawei European Research Institute, Belgium

**#51 LSTM-Powered Point Process Modelling for
Idle State Detection in Cyclic Energy Data**
Andrew Charles Connelly, Syed Ali Raza Zaidi, Des McLernon,
University of Leeds, UK

Smart Energy Systems

Monday 15³⁰ – 17⁰⁰ Room: 2.1.

CHAIRS: Christer Ahlund,
Lulea University of Technology, Sweden
Diana Robescu,
POLITEHNICA Bucharest, Romania

**#61 Direct Against Indirect Short-Term Net Load Forecasting
Using Machine Learning Principles for Renewable Microgrids**
Georgios Tziolis, Andreas Livera, Anna Michail,
George Makrides, George Georghiou,
University of Cyprus, Cyprus

**#85 Federated Learning Optimization
for Energy Communities in Smart Cities**
Nuno Alexandre Gonçalves Mendes, Jerome Mendes,
Institute for Systems and Robotics, Portugal
Pedro Moura, Carlos Henggeler Antunes,
University of Coimbra, Portugal
Javad Mohammadi,
University of Texas at Austin, USA

**#91 A private blockchain based P2P
energy trading platform for energy users**
Vidya Krishnan Mololoth, Christer Ahlund, Saguna Saguna,
Lulea University of Technology, Sweden

**#115 Sun Tracking System For Photovoltaic Panels
In The Context Of Smart Cities Applications**
Bogdan Sosdian, Andreas Bild, Razvan Bogdan, Marius Marcu,
Politehnica University of Timisoara, Romania

**#120 Extreme supervised algorithm
for Day Ahead market price forecasting**
Stylianos Loizidis, Spyros Theocharides, Giorgos Makrides,
Andreas Kyprianou, George Georghiou,
University of Cyprus, Cyprus
Venizelos Venizelou, Demetris Evagorou,
Cyprus Energy Regulatory Authority, Cyprus

Smart Health and Smart Transportation

Monday 15³⁰ – 17⁰⁰   Room: 2.2.

CHAIRS: Leila Martins,
Federal University of Technology – Parana, Brazil
Valentin Năvrăpescu,
POLITEHNICA Bucharest, Romania

#49   **Epsilon Futuristic Virtual User Environment**
Omar Al Hashimi, *University of West London, UK*

#81   **Low-cost sensors for odor monitoring:
the state of the art and challenges**
Leila Martins, *Edson De Camargo Federal University of Technology
– Parana, Brazil*
Marcos Morais,
Universidade Católica Del Maule, Chile

#62   **Using flow analysis of bike-sharing system for finding
spatiotemporal mobility patterns in Kuopio city region**
Jesse Honkanen, Laura Leppanen, Harri Auvinen,
Savonia University of Applied Sciences, Finland

#122 **Implementation of a Spontaneous Matching Algorithm for
On-Demand Shuttle Systems in Microsimulation**
Oytun Arslan, Silja Hoffmann,
University of Bundeswehr Munich, Germany

#123 **At Scale Short-Term Forecasting and Anomaly Detection for
GHG emissions with Digital Twins**
Manuel Pena Munoz, Savvas George Makariou, Sachio Kobayashi,
Fujitsu Research of Europe, UK

#111 **A New Semantic Similarity Scheme for more Accurate
Identification in Medical Data**
Colin Wilcox, Kristopher Welsh, Nicholas Costen,
Manchester Metropolitan University, UK
Soufiene Djahel, *University of Huddersfield, UK*
Vasilios Giagos, *University of Essex, UK*

New habitats and Smart X Services

Monday 15³⁰ – 17⁰⁰   Room: 2.3.

CHAIRS: Myriam Guedey,
HFT Stuttgart, Germany
George Seriţan,
POLITEHNICA Bucharest, Romania

#70   **IoT-Paradigm: Evolution Challenges and Proposed Solutions**
Mohammad Al Rawajbeh, Shadi AlZubi, Ahmad Alkhatib,
Al Zaytoonah University of Jordan, Jordan

#63   **Reduction of Heating Energy Consumption of
Existing Public Buildings Through the Use of IoT**
Myriam Guedey, Robert Otto, Dieter Uckelmann,
HFT Stuttgart, Germany

#84   **Secure IoT Gateway: the first layer of cybersecurity for
secure infrastructure in smart cities**
Robert Alexandru Crăciun, Radu Nicolae Pietraru,
Mihnea Moisescu, *POLITEHNICA Bucharest, Romania*

#92   **Architecture for Privacy-Preserving Greenhouse
Gas Emissions Calculation among Multiple Organizations
using Homomorphic Encryption**
Yusuke Sasaki, Tomoka Segawa, Takashi Michikata,
Noboru Koshizuka, *The University of Tokyo, Japan*

#83   **A Standardized Trust Model for Enabling Data Security and
Interoperability within Smart Distributed Systems**
David Maher, Hebberly Ahatlan, Anahita Poonegar,
Intertrust Corporation, USA

#72   **Analyzing the Correlation of People Flow and Sales
Using a Large Number of People Counters Installed
in a Shopping Complex**
Shunya Taniguchi, Chisaki Hori, Ge Hangli,
Takashi Michikata, Noboru Koshizuka,
The University of Tokyo, Japan

Workshop on The Future of Learning in Smart Cities

Monday 13³⁰ – 15⁰⁰　　　　Room: Council

CHAIRS: Moustafa Mazin Nasralla
Prince Sultan University, Saudi Arabia
Haleem Farman
Prince Sultan University, Saudi Arabia
Ikram Ur Rehman
University of West London, UK
Parisa Saadati
University of West London, UK

#137 **Facial Emotion Recognition in Smart Education Systems: A Review**
Haleem Farman, Ahmed Sedik,
Moustafa Nasralla, Maged Abdullah Esmail,
Prince Sultan University, Saudi Arabia

#138 **A Millimeter Wave Antenna for Smart Education System: A Design-Based Approach**
Mehre Munir, Moustafa Nasralla,
Maged Abdullah Esmail, Haleem Farman,
Prince Sultan University, Saudi Arabia

#147 **Smart Education in Smart Cities: Challenges And Solution**
Afzal Badshah,*International Islamic University, Pakistan*
Moustafa Nasralla, Haleem Farman,
Prince Sultan University, Saudi Arabia
Ateeqa Jalal,
University of Science and Technology, Pakistan

#155 **Enhancing Classroom Communication: Exploring the Impact of Anonymous Participation on Student Performance**
Nawal Butt, Syed Ihtesham Hussain,
Riphah International University, Pakistan
Aamir Anwar, Parisa Saadati,
University of West London, UK
Ijaz Ul Haq,
University of Lleida, Spain

#159 **Sentiment Analysis and Student Emotions: Improving Satisfaction in Online Learning Platforms**
Aamir Anwar, Ikram Ur Rehman, Nasrullah Khilji,
University of West London, UK
Moustafa Nasralla, Sohaib Bin Altaf Khattak,
Prince Sultan University, Saudi Arabia

#162 **Improving Nursing Educational Practices and Professional Development through Smart Education in Smart Cities: A Systematic Literature Review**
Nevena Dicheva, Ikram Ur Rehman, Laden Husamaldin,
Sama Aleshaiker, *University of West London, UK*

Workshop on Women in Engineering

Monday 15³⁰ – 17⁰⁰　　　　Room: Council

CHAIR: Nagham Saeed – *University of West London, UK*

Opening remarks
George Zissis, *Toulouse 3 University, France*

Smart Cities, Cultural Heritage, and Community Empowerment: Bridging the Past and Future
Arabela Briciu, *Transilvania University of Brasov, Romania*

Beyond Traffic: Harnessing Real-Time Multimodal Mobility Monitoring for Inclusive Urban Planning
Mozhgan Pourmoradnasseri, *University of Tartu, Estonia*

The Revolution of Smart Systems towards Smart Cities
Moustafa Nasralla, *Prince Sultan University, Saudi Arabia*

Using smart home technologies to monitor behavioural changes in households with dementia
Alina-Irina Șerban, *Imperial College London, UK*

Women's Role in Shaping Inclusive Smart Cities
Panel Discussion *(All invited speakers will be participating)*

Overview of the IEEE WIE UK& Ireland Affinity Group Support
Nagham Saeed, *University of West London, UK*

Workshop on Smart and Circular Cities

Monday 13³⁰ – 15⁰⁰

Room: 3.1.

CHAIRS: Athanasios Kalogeras
Industrial Systems Institute, Greece
Luis Munoz
University of Cantabria, Spain
Georgios Mylonas
Industrial Systems Institute, Greece
Dimitrios Serpanos
Computer Technology Institute, Greece

#129 **A Study on Indoor Noise Levels in a Set of School Buildings in Greece utilizing an IoT infrastructure**
Georgios Mylonas, Lidia Pocero Fraile, Stelios Tsampas, *Industrial Systems Institute, Greece*

#131 **Metacities Excellence Hub: exploiting digital twins and metaverse technologies in South-Eastern Europe**
Spyros Denazis, Tanya Politi, University of Patras*, Greece*
Evi Faliagka, Christos Antonopoulos, Eleni Christopoulou, Tanya Politi, *University of Peloponnese, Greece*
Christos Tranoris, *P-NET NEW GENERATION EMERGING NETWORKS &VERTICALS, Greece*
Didoe Prevedourou, *HELLENIC AMERICAN EDUCATION CENTER, Greece*
Nikos Kostis, *Yodiwo, Greece*
Ioanna Ioannou, *EBOS TECHNOLOGIES LIMITED, Cyprus*
Christophoros Christophorou, Iacovos Ioannou, Vasos Vassiliou, *CYENS CENTER OF EXCELLENCE, Cyprus*
Vladimir Poulkov, *Technical University of Sofia, Bulgaria*
Sotir Sotirov, *Southeast Digital Innovation Hub, Bulgaria*
Albena Dimitrova Mihovska, *Aarhus University, Denmark*

#130 **NFC Based Digital Prescription for Improving Patient Care and Reduce Pharmacy Losses**
Arpita Kalda, Sardar Vallabhbhai, *National Institute of Technology, India*
Vivek Mangal, *WiLO Networks, USA*
Gajendranath Chowdary, *Indian Institute of Technology, India*

Workshop on Smart and Circular Cities

Monday 15³⁰ – 17⁰⁰

Room: 3.1.

CHAIRS: Athanasios Kalogeras
Industrial Systems Institute, Greece
Luis Munoz
University of Cantabria, Spain
Georgios Mylonas
Industrial Systems Institute, Greece
Dimitrios Serpanos
Computer Technology Institute, Greece

#140 **Decision-Making in Construction Project Management: Integrating Smart City Concepts and Principles of Sustainable Development**
Pedro Nunez-Cacho, *University of Jaen, Spain*
Jaroslaw Gorecki, *Bydgoszcz University of Science and Technology, Poland*

#141 **Dimensionality Reduction on IoT Monitoring Data of Smart Building for Energy Consumption Forecasting**
Konstantinos Koutras, Agorakis Bompotas, Athanasios Kalogeras, Christos Alexakos, *Industrial Systems Institute Athena Research Center, Greece*
Constantinos Halkiopoulos, *University of Patras, Greece*

#146 **Vertical Federated Learning in Malware Detection for Smart Cities**
Dimitrios Serpanos, Georgios Xenos, *University of Patras, Greece*

Tuesday PROGRAM
26 September, 2023

Advanced applications for smart cities

Panel on The 15 Minute City

Workshop on Improving QoL of People with Disabilities

Advanced applications for smart cities

Tuesday 09³⁰ – 11⁰⁰   Room: 2.1.
CHAIRS: Wail Gueaieb, *University of Ottawa, Canada*
        Mariacristina Roscia, *University of Bergamo, Italy*

#121   **Legal Implications for Autonomous Vehicles Mobility in Future Smart Cities**
Ankit R. Patel, *University of Minho, Portugal*
Mariacristina Roscia, *University of Bergamo, Italy*
Dean Vucinic, *Vrije University of Brussels, Belgium*

#35   **SOCIO-BEE: a next-generation Citizen Science platform for citizens' engagement to air pollution measuring**
Dimitrios Karanassos, Charalampos Kyfonidis, Georgios Angelis, Alexandros Emvoliadis, Traianos-Ioannis Theodorou, Alexandros Zamichos, Anastasios Drosou, Dimitrios Tzovaras, *Information Technologies Institute, Greece*

#43   **euAirQuality: Real-time Visualization and Analysis of European Air Quality**
Andreea-Mihaela Niculae, Adela Bara, Diana Andreea Cauniac, Simona-Vasilica Oprea, *Bucharest University of Economic Studies, Romania*

#53   **RECOD: Resource-Efficient Camouflaged Object Detection for UAV-Based Smart Cities Applications**
Abbas Khan, Mustaqeem Khan, Wail Gueaieb, Abdulmotaleb El Saddik, Mohamed Bin Zayed, *University of Artificial Intelligence, UAE*
Wail Gueaieb, Abdulmotaleb El Saddik, *University of Ottawa, Canada*
Guilia De Masi, *Technology Innovation Institute, UAE*
Fakhri Karray, *University of Waterloo, Canada*

#54   **Combating Counterfeit Products in Smart Cities with Digital Twin Technology**
Muhammad Saad, Mustaqeem Khan, Muhammad Saeed, Abdulmotaleb El Saddik, Wail Gueaieb, *Mohamed Bin Zayed University of Artificial Intelligence, UAE*
Abdulmotaleb El Saddik, Wail Gueaieb, *University of Ottawa, Canada*

#71   **Proposal for the Implementation of Spatial Common Ground and Spatial AI using the SSCP (Spatial Simulation-based Cyber-Physical) Model**
Youichiro Miyake, Keisuke Toyoda, Masashi Seiki, *Institute of Industrial Science University of Tokyo, Japan*
Kasuya Takashi, *Takenaka Corporation, Japan*
Akihiko Hyodo, *Hitachi, Ltd., Japan*

Advanced applications for smart cities

Tuesday 13³⁰ – 15⁰⁰   Room: 2.1.

CHAIRS: Madjid Fathi, *University of Siegen, Germany*
        Corina Dumitrescu, *POLITEHNICA Bucharest, Romania*

#117   **An Overview of the Learning Capability and Adaptability of a Digital Consulting Assistant in WordPress CMS for the Smart City Domain**
Johannes Zenkert, Madjid Fathi, *University of Siegen, Germany*

#110   **Analyzing Criminal Macrocauses on Intentional Lethal Violent Crimes: An Unsupervised Learning Approach for Smart City Initiatives**
Ramiro de Vasconcelos dos Santos Junior, Joao Vitor Venceslau Coelho, Nelio Alessandro Azevedo Cacho, Daniel Sabino Amorim de Araujo, *Federal University of Rio Grande do Norte, Brazil*

#39   **Develoment of Temperature Algorithm based on Control of Radiator Valve**
Danish Iqbal, *Politecnico di Milano, Italy*
Roberto LA CAPRUCCIA, *Fantini Cosmi SPA, Italy*

#103   **An Efficient Violence Detection Approach for Smart Cities Surveillance System**
Mustaqeem Khan, Wail Gueaieb, Abdulmotaleb El Saddik, Fakhri Karray, *Mohamed Bin Zayed University of Artificial Intelligence, UAE*
Wail Gueaieb, Abdulmotaleb El Saddik, *University of Ottawa, Canada*
Guilia De Masi, *Technology Innovation Institute, UAE*
Fakhri Karray, *University of Waterloo, Canada*

#93   **Dependability and quality-aware connectivity in smart cities applications**
Thiago C. Jesus, Wagner A. Ferreira Junior, *State University of Feira de Santana, Brazil*
Daniel G. Costa, Francisco Vasques, *INEGI University of Porto, Portugal*
Paulo Portugal, *INESC-TEC University of Porto, Portugal*

Advanced applications for smart cities

Tuesday 09³⁰ – 11⁰⁰   Room: 2.2.

CHAIRS: Thulisile Phambukeli,
University of Johannesburg, South Africa
Dan Grigorescu,
POLITEHNICA Bucharest, Romania

#23   **The suitability of the proposed new coastal 'smart city' between Port Saint Johns and Margate on the Wild Coast in KwaZulu-Natal South Africa**
Pilisiwe Masiba, Thulisile Phambukeli,
University of Johannesburg, South Africa

#24   **Paws for Concern: Spotting Strays and Abandoned Pets in Natural Spaces**
Oluwakemi Akinwehinmi, Francesc Solsona,
University of Lleida, Spain
Pedro Arnau del Amo, Angel Priegue, Jordi Jimenez,
Information Technology, Spain

#47   **An Evaluation of Conditional Random Fields in Predicting Out-of-Home Activities**
Yen Tran, Naohisa Hashimoto, Takafumi Ando,
Toshihisa Sato, Takahiro Miura, *National Institute of Advanced Industrial Science & Technology, Japan*

#50   **Evaluating and improving on the development plan of South Saad Al Abdullah as a smart city in Kuwait**
Nayef Alghais, *Kuwait University, Kuwait*
Ahmed Ali, *Vision International, Kuwait*

#57   **Securing the smart city: Patterns of public acceptance for integrated technological solutions**
Petra Saskia Bayerl, Luke Bates, Babak Akhgar,
Sheffield Hallam University, UK

#68   **Power Quality Prediction at Consumers Using a Hybrid Knowledge-Based Approach**
Anca Miron, Andrei Cziker, Ștefan Ungureanu, Horia Beleiu,
Cosmin Darab, *Technical University of Cluj-Napoca, Romania*

Panel on The 15 Minute City

Tuesday 13³⁰ – 15³⁰   Room: 2.2.

CHAIRS: Ioana Făgărășan,
POLITEHNICA Bucharest, Romania
Răzvan Crăciunescu,
POLITEHNICA Bucharest, Romania

Governance for transition support to climate neutral cities
Florin Pop, *National Institute for Research & Development in Informatics, Romania*
Ciprian Dobre, *POLITEHNICA Bucharest, Romania*

Intelligent mobility and infrastructure for green cities
Mihai Dimian, *Stefan cel Mare University of Suceava, Romania*
Florin Nemțanu, *POLITEHNICA Bucharest, Romania*

Sustainable energy to support the smart city climate-neutrality
Andrei Ceclan, *Technical University of Cluj-Napoca, Romania*
Ioana Făgărășan, *POLITEHNICA Bucharest, Romania*

Workshop on Improving QoL of People with Disabilities

Tuesday 09^{30} – 11^{00} Room: 2.3.

CHAIRS: Ikram Ur Rehman – *University of West London, UK*
Moustafa Mazin Nasralla
Prince Sultan University, Saudi Arabia
Laden Husamaldin – *University of West London, UK*
Sama Aleshaiker – *University of West London, UK*
Drishty Sobnath – *Solent University, UK*

#132   A Conceptual Evaluation of the Data as Partner (DAP) Framework
Sonia Hassan, Drishty Sobnath, Esther Snell, *Solent University, UK*
Olufemi Isiaq, *Universiy of Arts London, UK*

#134   Enhancing Wheelchair Communications Utilizing Thread Protocol for Improved Patient Safety
Sohaib Bin Altaf Khattak, Haleem Farman, Moustafa Nasralla,
Maged Abdullah Esmail, *Prince Sultan University, Saudi Arabia*

#136   Blockchain based Dynamic Consent Management Systems For Enhancing Quality of Life for People with Disabilities
Muhammad Irfan Khalid, *University of Salerno, Italy*
Mansoor Ahmed, *Maynooth University, Ireland*

#143   A Transparent CAPTCHAS Verification System for Cloud-based Smart & Secure Applications
Nawal Butt, Syed Ihtesham Hussain,
Riphah International University, Pakistan
Aamir Anwar, Parisa Saadati, *University of West London, UK*
Ijaz Ul Haq, *University of Lleida, Spain*

#145   Traffic Forecasting & Route Optimization in Smart Environment Using Graph Representation Learning
Syed Muhammad Ahmed Hassan Shah, Syed Faizan Hussain Shah,
University Islamabad, Pakistan
Saddam Hussain, *University Brunei Darussalam, Brunei*
Kanishka Turrakheil, *University of West London, UK*

Workshop on Improving QoL of People with Disabilities

Tuesday 13^{30} – 15^{00} Room: 2.3.

CHAIRS: Ikram Ur Rehman – *University of West London, UK*
Moustafa Mazin Nasralla
Prince Sultan University, Saudi Arabia
Laden Husamaldin – *University of West London, UK*
Sama Aleshaiker – *University of West London, UK*
Drishty Sobnath – *Solent University, UK*

#149   Empowering the Blind: AI-Assisted Solutions for Visually Impaired People
Muhammad Shuaib Quresh,
Chungnam National University, *Republic of Korea*
Inam Ullah Khan, SMuhammad Bilal Qureshi,
University of Lakki Marwat, Pakistan
Fida Muhammad Khan,
University of Science & Technology, Pakistan
Sama Aleshaiker, *University of West London, UK*

#158   Smart Attendance Monitoring System Using Face Recognition for People with Disabilities (PwDs)
Nischal Karki, Aamir Anwar, Ikram Ur Rehman, Laden Husamaldin,
Parisa Saadati, *University of West London, UK*

#160   UAV Automated Charging Station and Charging Network in Smart Cities for Telemedicine Delivery
Maria Camelia Danciu, Ikram Ur Rehman,
Nurha Yingta, Sama Aleshaiker,
University of West London, UK

#152   Evil Twin Attacks on Smart Home IoT Devices for Visually Impaired Users
Abel Yeboah-Ofori, Aden Hawsh, *University of West London, UK*

#153   Effects of Cyberattacks on Virtual Reality and Augmented Reality Technologies for People with Disabilities
Abel Yeboah-Ofori, Aden Hawsh, *University of West London, UK*

Wednesday PROGRAM
27 September, 2023

Advanced applications for smart cities

New habitats for smart cities

Smart systems

Development of smart cities

Workshop Decarbonization / digitalization of smart cities

Advanced applications for smart cities

Wednesday 0930 **– 11**00   Room: 2.1.

CHAIRS: Gulfem Alptekin, *Galatasaray University, Turkey*
Georgiana Balaban, *POLITEHNICA Bucharest, Romania*

#33 **Understanding Citizen Feedback of Jakarta Government Super App Leveraging Deep Learning Models**
Muhammad Cendekia Airlangga, Andi Sulasikin, Yudhistira Nugraha, Nur Laily Romadhotul Husna, Muhamad Erza Aminanto, Fajar Kurniawan1, Juan Intan Kanggrawan, *Jakarta Smart City, Indonesia*
Yudhistira Nugraha, *Telkom University, Indonesia*
Muhamad Erza Aminanto, *Monash University Indonesia, Indonesia*

#77 **Deep Learning Distribution Model Using Osmotic Computing**
Leonandro Gurgel, Arthur Souza, Nelio Cacho, Frederico Lopes, *Federal University of Rio Grande do Norte, Brazil*

#78 **An End-to-End Framework for Moving Objects in Smart Cities**
Alison Silva, Abraao Dantas, Rodrigo Rocha, Frederico Lopes, Nelio Cacho, *Federal University of Rio Grande do Norte, Brazil*

#80 **System of System Strategy for Multi-level Interoperability for Smart Cities**
Stefano Loss, Daniel Colao, Nelio Cacho, Frederico Lopes, *Federal University of Rio Grande do Norte, Brazil*

#113 **Smart Management of Leaks in Underground Pipelines using Machine Learning**
Anubhav Dixit, Shaijal Tripathi, Bhavya Gupta, Navneet Sharma, Sana Chaitanya, Priyanka Bagade, *Indian Institute of Technology Kanpur, India*

#124 **Review of Sustainable Smart City Assesment Models' KPIs**
Dilek Akburak, Tuncay Gurbuuz, Gulfem Alptekin, *Galatasaray University, Turkey*

New habitats for smart cities

Wednesday 09³⁰ – 11⁰⁰   Room: 2.2.

CHAIRS: Krish Arora, *The Harker High School, USA*
Alexandru Mandiș, *POLITEHNICA Bucharest, Romania*

#127 Pavement Pothole Monitoring via Artificial Intelligence Technology
Guo Dangui,
Boshen Branch of Guangdong Boda Expressway Co, China
Weixing Hong, *Nanjing Zhixing Information Technology Co., China*
Wael A. Altabey, *Alexandria University, Egypt*

#128 Intelligence Approach for Structural Monitoring via UAV-Artificial Intelligence-Based
Guo Dangui, *Boshen Branch of Guangdong Boda Expressway Co, China*
Weixing Hong, *Nanjing Zhixing Information Technology Co., China*
Wael A. Altabey, *Alexandria University, Egypt*

#20 FindMySpace: A Cost Effective Carbon Reduction Solution for Parking
Krish Arora, *The Harker High School, USA*

#38 Mobility and Transport Data for City Digital Twin Modeling and Exploitation
Pierfrancesco Bellini, Stefano Bilotta, Enrico Collini,
Marco Fanfani, Paolo Nesi, *University of Florence, Italy*

#73 Development of Indonesian Language Intelligent Chatbot for Public Services in JAKI Application
Aufa Fadhlurohman, Andi Sulasikin, Yudhistira Nugraha,
Nur Laily Romadhotul Husna, Muhamad Erza Aminanto,
Juan Intan Kanggrawan, *Jakarta Smart City, Indonesia*
Yudhistira Nugraha, *Telkom University, Indonesia*
Muhamad Erza Aminanto, *Monash University, Indonesia*

#112 Electric Vehicle Identification in Low-Sampling Non-Intrusive Load Monitoring Systems Using Machine Learning
Seyedmehdi Khaleghian, Toan Tran, Austin Harris, Mina Sartipi,
University of Tennessee at Chattanooga, USA
Jin Cho, *Yale University, USA*

Workshop Decarbonization / digitalization of smart cities

Wednesday 09³⁰ – 11⁰⁰   Room: Council

CHAIRS: Francesco Riganti Fulginei, *Roma Tre University, Italy*
Gheorghe Lăzăroiu, *POLITEHNICA Bucharest, Romania*

#82 Energy Community part of Smart City
Ionuț Ciobanu, George Cristian Lăzăroiu,
POLITEHNICA Bucharest, Romania
Francesco Riganti Fulginei, *Roma Tre University, Italy*

#10 Analysis of Distribution Areas to achieve Positive Energy Communities
Georgiana Balaban, George Cristian Lăzăroiu, Virgil Dumbravă,
POLITEHNICA Bucharest, Romania

#14 Smart Homes Survey Analysis
Mariacristina Roscia, *University of Bergamo, Italy*
Vasile Dâncu, *University of Bucharest, Romania*
George Cristian Lăzăroiu, *POLITEHNICA Bucharest, Romania*

#8 Smart Students for Smart Cities
Mihai Octavian Popescu, Claudia Laurenta Popescu,
Alexandra Cătălina Lăzăroiu, *POLITEHNICA Bucharest, Romania*

#6 Renewable Energy Sources for Decarbonization of Smart Cities
Alexandra Cătălina Lăzăroiu, Claudia Laurenta Popescu,
Mihai Octavian Popescu, *POLITEHNICA Bucharest, Romania*
Cornel Panait, *University Maritima of Constanta, Romania*

#164 Stages of Hydrogen Implementation for a Green City of the Future
Lucian Mihăescu, Dorel Stoica, Gheorghe Lăzăroiu,
Elena-Adriana Mierloiu, *POLITEHNICA Bucharest, Romania*

#165 Analyzing Energy Consumption and Hot Water Usage in the Titan Neighborhood of Bucharest: Implications for Smart City Development
Cristian-Valentin Strejoiu, Mohammed Gmal Osman,
Gheorghe Lăzăroiu, *POLITEHNICA Bucharest, Romania*

Smart systems

Wednesday 09³⁰ – 11⁰⁰   Room: 2.1.

CHAIRS: Mayank Parmar, *Technological University Dublin, Ireland*
        Laurenţiu Lipan, *POLITEHNICA Bucharest, Romania*

#116   **Using cellular infrastructures data to foster the transition towards smart cities: a systematic mapping**
Eder M. Barbosa, Josias Lima, Alessandro Santos, *Institute for Technological Research, Brazil*
Patricia Baptista, *Universidade de Lisboa, Portugal*

#126   **Capturing the behaviour of volunteer pedestrians in a newly-developed university campus using a distributed array of Bluetooth Low Energy devices**
Ahlam AlAnbouri, Mayank Parmar, David Powell, Paula Kelly, Niall Holmes, Damon Berry, Lorraine D'Arcy, *Technological University Dublin, Ireland*

#26   **Considerations in Scheduling and Maintaining Power Flows in Distribution Grids of Large Cities and Metropolitan Areas**
Pavel Ilyushin, Sergey Filippov, *Energy Research Institute of the Russian Academy of Sciences, Russia*
Konstantin Suslov, *Irkutsk Natioal Research Technical, Russia*

#76   **Parallel Operation of an Active Rectifier and a DC/DC Converter**
Elena Sosnina, Alexandr Chivenkov, Ivan Lipuzhin, Dmitry Aleshin, Ivan Trofimov, *Nizhny Novgorod State Technical University n.a. R.E. Alekseev, Russia*

#90   **The claimed functions of a thyristor voltage and power regulator research**
Elena Sosnina, Alexandr Chivenkov, Ivan Lipuzhin, Dmitry Aleshin, Ivan Trofimov, *Nizhny Novgorod State Technical University n.a. R.E. Alekseev, Russia*

#118   **Detection of Pause in a Pedestrian's Movement on a Linear Walkway using Bluetooth Low Energy Received Signal Strength Indicator**
Mayank Parmar, Paula Kelly, Damon Berry, *Technological University Dublin, Ireland*

Smart applications for smart cities

Wednesday 11³⁰ – 13⁰⁰   Room: 2.2.

CHAIRS: Nadia Kozievitch,
        Federal University of Technology – Paraná, Brazil
        Tudor Leonida, *POLITEHNICA Bucharest, Romania*

#56   **A Smart Prescription Container for Monitoring Chronic Disease Patients**
Rania A Molla, *King Abdulaziz University, Saudi Arabia*

#42   **Simulation Study on Route Selection and Efficiency of Subway Passenger Emergency Evacuation**
Zeqi Wang, Yifan Wang, Hao Fan, *Wuhan University, China*

#52   **Assisting victims of road accidents: a case study of aeromedical transport improvements**
Jeferson Costa, Lucas Ribeiro, Gabriel Guerrero, Nadia Kozievitch, Juliana de Santi, Keiko Fonseca, *Federal University of Technology - Paraná, Brazil*

#58   **A GIS Approach to Vehicle Wear Index Calculation in Maintenance Programs**
Matheus Costa, Nadia Kozievitch, Keiko Fonseca, Rita Berardi, Maiara Flausino, *Federal University of Technology - Paraná, Brazil*

#60   **Low-Power Traffic Surveillance using Multiple RGB and Event Cameras: A Survey**
Tobias Fleck, Svetlana Pavlitska, Sven Nitzsche, Brian Pachideh, Juergen Becker, Oliver Bringmann, J. Marius Zollner, *FZI Research Center for Information Technology & Karlsruhe Institute of Technology, Germany*
Federico Peccia, Oliver Bringmann, *FZI Research Center for Information Technology & University of Tubingen, Germany,* Soikat Hasan Ahmed, Emre Neftci, *Forschungszentrum Julich and RWTH Aachen, Germany*
Svea Marie Meyer, *Mathis Richter, Intel Germany, Germany*
Kevin Broertjes, *NXP Semiconductors Germany, Germany*

#74   **Improving Autonomous Vehicle Reasoning with Non-Monotonic Logic: Advancing Safety and Performance in Complex Environments**
Jamal Raiyn, *Technical University of Applied Sciences Aschaffenburg, Germany*
Galia Weidl, *University of Applied Sciences, Germany*

Development of smart cities

Wednesday 11³⁰ – 13⁰⁰   Room: 2.3.

CHAIRS: Hamid Alali, *Dubai Electricity & Water Authority, UAE*
Alexandra Cătălina Lăzăroiu,
POLITEHNICA Bucharest, Romania

#86   **SecFob: A Remote Keyless Entry Security Solution**
Braxton Bolt, Hoda Maleki, Gagan Agrawal,
Jeffrey D. Morris, Khan Farabi, *Augusta University, USA*

#87   **Message Based Terminal Manager**
for Public Transportation Systems
Can Oz*, Kent Kart Ege Elektronik A.Ş, Turkey*
Yasemin Topaloglu, *Ege University, Turkey*

#75   **A mesoscale modeling analysis of green roof impact**
in thermal field in the mediterranean Chilean urban areas
Marcos V. Bueno de Morais, *Universidad Catolica del Maule, Chile*
Viviana V. Urbina Guerrero, *Meteored, Spain*
Leila Droprinchinski Martins,
Federal Technological University – Parana, Brazil
Edson Roberto Marciotto,
Federal University of Santa Catarina, Brazil

#55   **Gaming-Based Education System for Children**
on Road Safety in Metaverse Towards Smart Cities
Muhammad Saeed, Abbas Khan, Mustaqeem Khan,
Muhammad Saad, Abdulmotaleb El Saddik, Wail Gueaieb,
Mohamed Bin Zayed University of Artificial Intelligence, UAE
Abdulmotaleb El Saddik, Wail Gueaieb, *University of Ottawa, Canada*

#9   **EV Charger Placement Optimization using**
D-Wave Quantum Computing Solvers
Neeraj Subramanian, Hamid Jasim Alali,
Ali Rashed Bin Ghaith Alsuwaidi,
Dubai Electricity & Water Authority, UAE

#102   **Indication of pedestrian's travel direction through Bluetooth**
Low Energy signals perceived by a single Observer device
Mayank Parmar, Paula Kelly, Damon Berry,
Technological University Dublin, Ireland