

## 2023 2nd International Conference on Smart Cities 4.0 Program

Sunday, October 22

9:00 am- 10:00 am	Registration at GUC: <i>Registration and Reception at GUC</i>					Hall D1.0
10:00 am- 10:15 am	Official Opening: <i>National Anthems and Short Video about the GUC</i>					
10:15 am- 10:20 am	Welcoming Speech: <i>Prof Dr Ibrahim El Dimeery- Conference Chair</i>					
10:20 am- 10:25 am	Welcoming Speech: <i>Prof Dr Yasser Hegazy -University President</i>					
10:25 am- 10:35 am	Welcoming Speech: <i>Prof Dr Ashraf Mansour -BOT Chairman and Conference honorary Chair</i>					
10:35 am- 10:45 am	Welcoming Speech: <i>Prof Dr Silke Wieprecht -University of Stuttgart</i>					
11:00 am- 11:30 am	Welcoming Speech: Ministers					
11:30 am- 12:15 pm	Exhibition: <i>Exhibition Opening and Coffee Break</i>					
12:15 pm- 12:30 pm	ULM City Delegates: <i>ULM City Delegates speech</i>					
12:30 pm- 1:00 pm	Keynote 1: Prof. Dr. Ing. Dieter Fritsch <i>Smart Cities and the Metaverse - Collaborations Everywhere</i>					
1:00 pm- 1:30 pm	Keynote 2: Dr. Jürgen Dold <i>The Metaverse is not flat. How Smart Digital Reality will add PHYSICAL DIMENSION to a 2D internet</i>					
1:30 pm- 2:00 pm	Keynote 3: Prof. Dr. Amr Safwat <i>ITIDA : 17 years of supporting industry and academia collaboration</i>					
2:00 pm- 3:15 pm	Lunch: <i>Lunch</i>					Halls D1.05 and D1.03
3:30 pm- 4:30 pm	Technical Session 01: <i>Sustainable Design and Construction (1) D4.203</i>	Technical Session 02: <i>Sustainable Building materials (1) D4.204</i>	Technical Session 03: <i>Sustainable utilities D4.205</i>	Technical Session 04: <i>5G and beyond D4.201</i>	Technical Session 05: <i>Smart Cities Use Cases (1) D4.210</i>	
4:30 pm- 5:30 pm	Technical Session 06: <i>Sustainable building materials (2) D4.203</i>	Technical Session 07: <i>Climate Change and Environmental Conservation (1) D4.204</i>	Technical Session 10: <i>Design and construction in smart cities D4.205</i>	Technical Session 08: <i>Securing Smart Cities D4.201</i>	Technical Session 09: <i>Applications of Machine Learning in Smart Cities D4.210</i>	
6:30 pm – 8:30 pm	Gala Dinner in the GUC – Fountain Area					

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## 2023 2nd International Conference on Smart Cities 4.0 Program

### Monday, October 23

8:30 am- 9:00 am	Registration and Reception at GUC: Registration and Reception at GUC					Hall D1.0
9:00 am- 9:30 am	Keynote Lecture 4: Dr. Nadine Alameh <i>Geospatial at its best: Powering Smart Cities, Powering the World</i>					
9:45 am- 10:15 am	Keynote Lecture 5: Arch. Jan Blasko <i>Designing in Dialogue - Towards Human Centered City</i>					
10:30 am- 11:00 am	Keynote Lecture 6: Prof. Dr. Christoph Stiller <i>Perspectives of automated vehicles in Smart Cities</i>					
11:00 am – 11:30am	Keynote Lecture 7:					
11:00 am- 11:15 am	Sponsor Presentation: <i>3D Geoscan</i>					
11:15 am- 12:00 pm	Break: <i>Coffee Break</i>					
12:00 pm- 12:15 pm	Sponsor Presentation: <i>Geofem Company</i>					
12:15 pm- 12:45 pm	Sponsor Presentation: <i>MIDAR</i>					
1:00 pm- 2:30 pm	Panel Discussion: (Prof. Ibrahim El-Dimeery, Prof. Dr. Ahmed Madian, Dr. Nadine Alameh, Arch. Jan Blasko) <i>Quality of Life in Smart Cities</i>					Halls D1.05 and D1.03
2:30 pm- 3:30 pm	Lunch Break: <i>Lunch Break</i>					
3:30 pm- 4:30 pm	Technical Session 01: <i>Sustainable design and construction (2)</i> <b>D4.203</b>	Technical Session 02: <i>Sustainable building materials (3)</i> <b>D4.204</b>	Technical Session 03: <i>Sustainable spray- based 3D printing construction Materials</i> <b>D4.205</b>	Technical Session 04: <i>Smart Cities Use Cases (2)</i> <b>D4.201</b>	Technical Session 05: <i>Autonomous Vehicles and Virtual Reality</i> <b>D4.210</b>	
4:30 pm- 5:30 pm	Technical Session 06: <i>Geomatics and Geo- informatics for sustainable and smart cities</i> <b>D4.203</b>	Technical Session 07: <i>Climate Change and Environmental Conservation (2)</i> <b>D4.204</b>	Technical Session 08: <i>Intelligent building management system (1)</i> <b>D4.205</b>	Technical session 09: <i>Localization and Environment Mapping</i> <b>D4.201</b>	Technical Session 10: <i>Data Engineering and Smart Cities</i> <b>D4.210</b>	

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## 2023 2nd International Conference on Smart Cities 4.0 Program

### Tuesday, October 24

8:00 am - 8:30 am	Registration and Gathering: Gathering at GUC				<b>Hall D1.0</b>
8:30 am - 9:30 am	Transporting to GIU: <i>Transporting to GIU</i>				
9:30 am - 10:30 am	Welcoming in GIU: <i>Tour in the GIU</i>				
10:30 am - 11:00 am	Welcoming Speech: Prof. Dr. Slim Abdennadher President of the German International University				<b>M.014</b>
11:00 am – 11:15 am	Speech: Representative of Administrative Capital For Urban Development				
11:15 am – 11:45 am	Keynote Lecture 7: Prof. Dr. Iris Belle <i>Delivering Smart City Solutions: Approaches to Connect Visions, Technologies and Citizens</i>				
11:45 am – 12:15 pm	Keynote Lecture 8: Prof. Mohamed Aref <i>Egyptian Code for Smart Cities</i>				
12:15 pm- 1:15 pm	Lunch Break: <i>Lunch Break</i>				<b>M.03 1</b>
1:15 pm- 2:15 pm	Technical Session 01: <i>Sustainable design and construction (3)</i> <b>M3.414</b>	Technical Session 02: <i>Intelligent building management system (2)</i> <b>M3.420</b>	Technical Session 03: <i>Computer Vision in Smart Cities</i> <b>M3.419</b>	Technical Session 04: <i>Intelligent Transportation/Dones Systems</i> <b>M3.425</b>	
2:30 pm- 3:30 pm	Technical session 05: <i>Sustainable building materials (4)</i> <b>M3.414</b>	Technical Session 06: <i>Big data analysis in smart cities civil works</i> <b>M3.420</b>	Technical Session 07: <i>Renewable Energies</i> <b>M3.419</b>	Technical Session 08: <i>HCI in Smart Cities</i> <b>M3.425</b>	
3:30 pm - 4:30 pm	Closure: <i>Closing Ceremony and Certificates for Exhibitors</i>				<b>M.014</b>

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## 2023 2nd International Conference on Smart Cities 4.0 Program

**Sunday, October 22**

### Keynote 1: Smart Cities and the Metaverse - Collaborations Everywhere

**Prof. Dr. Ing. Dieter Fritsch**

**University of Stuttgart. Emeritus Professor Univ. Stuttgart, Stuttgart, Germany, GUC Vice Chairman Board of Trustees, Vice Chair UN- GGIM Private Sector Network**

**(12:30 pm- 1:00 pm) Session Chairman : Prof. Dr. Moustafa Baraka – Hall : D1.0**

### Keynote 2: The Metaverse is not flat. How Smart Digital Reality will add PHYSICAL DIMENSION to a 2D internet.

**Dr. Jürgen Dold**

**Former member of the Hexagon AB Executive Management. Chair of the Scientific Advisory Council of the GFZ German Research Centre for Geoscience in Potsdam, Germany. Patron Board member of the world Geospatial Industry Council and chairman of D5 AG in Switzerland**

**(1:00 pm- 1:30 pm) Session Chairman : Prof. Dr. Mona Badr – Hall: D1.0**

### Keynote 3: ITIDA: 17 years of supporting industry and academia collaboration

**Prof. Dr. Amr Safwat**

**Dean of the school of Engineering and Applied Sciences, Nile University, Egypt. Manager of the Information Technology Academia Collaboration (ITAC) program at the Information Technology Industry Development Agency (ITIDA). Recipient of the Egyptian encouragement state prize for engineering sciences in 2007 and 2014, and the first-class medal of excellence in 2017.**

**(1:30 pm- 2:00 pm) Session Chairman : Assoc. Prof. Dr. Maggie Mashaly - Hall: D1.0**

### Technical Session 01: Sustainable Design and Construction (1)

**(3:30 pm- 4:30 pm) Session Chairman : Assoc. Prof. Dr. Ayman Nassar – Dr. Ahmed Maher - Room: D4.203**

#### **Technical Session 01.1 *Protecting Smart City Structures from Fire Hazards: Experimental Analysis of Post-Tensioned Beams***

Mohamed Talaat, Ayman Moustafa, Mohamed Kohail and Ayman Khalil (Ain Shams University, Egypt)

#### **Technical Session 01.2 *Flexural Behaviour of Bamboo Concrete Beams***

Wael Refaat Ibrahim (Helwan University, Egypt); Waleed Fattah (Helwan, Egypt)

#### **Technical Session 01.2 *Direct Evaporative Cooling for Sustainability and Environmental Conservation***

Hesham Safwat, Mahmoud Ahmed Elsayed Ahmed and Mahmoud A. Altahan (The British University in Egypt, Egypt); Iman Salah Eldin El-Mahallawi (The British University in Egypt/ Cairo University)

#### **Technical Session 01.3 *Life Cycle Cost Analysis Comparison Between Structural Steel and Light Gauge Steel Structures***

Lama Mohamed Ashraf Aly (German University in Cairo, Egypt); Ahmed El-Tair (German University in Cairo GUC, Egypt); Ayman Hamdy Nassar (German University in Cairo, Egypt)

## Technical Session 02: Sustainable Building materials (1)

**(3:30 pm- 4:30 pm) Session Chairman : Assoc. Prof. Dr. Mohamed Koheil – Assoc. Prof. Dr. Amr El-Nemr - Room: D4.204**

### **Technical Session 02.1 High-Performance Grout for Post-Tensioned Tendons (Review Paper)**

Sarah Ibrahim (Ain Shams University, Egypt)

### **Technical Session 02.2 Nondestructive Testing on Concrete-Based Treated Wastewater**

Moemn El Gazzar (Engineering, Egypt); Amr ElNemr (The German University in Cairo (GUC), Egypt); Bassam Tayeh (Islamic University of Gaza, Palestine)

### **Technical Session 02.3 Advancing Sustainable Production of Eco-Friendly Foamed Concrete: A Comprehensive Review on Utilizing Waste Materials for Cement Reduction**

Mostafa Ser (October 6 University, Egypt); Ahmed EldeinHussin (Ain Shams University, Egypt); Ahmed Said (October 6 University, Egypt); Mohamed Kohail (Ain Shams University, Egypt)

### **Technical Session 02.4 Exploring the Different Stages of Treated Wastewater on Various Cement Types**

Amr ElNemr (The German University in Cairo (GUC), Egypt); Moemn El Gazzar (Engineering, Egypt)

## Technical Session 03: Sustainable utilities

**(3:30 pm- 4:30 pm) Session Chairman : Prof. Dr. Mahmoud El-Khafif –Prof. Dr. Ahmed Abdel Sattar - Room: D4.205**

### **Technical Session 03.1 Techno-Economic Evaluation and Environmental Benefit of PV-Based Electric Vehicle Charging Station on University Campus**

Ahmad I. ElShamy, Abdelwahab A. Hussein, Seif ElBadry, Engy Elshazly and Rania Rushdy Moussa (The British University in Egypt, Egypt); Iman Salah Eldin El-Mahallawi (The Centre for Renewable Energy, The British University in Egypt)

### **Technical Session 03.2 Porous Basalt Recycled Aggregate for Sustainable Environmentally Friendly Concrete**

Bakr Rabeeh (German University in Cairo, Egypt)

### **Technical Session 03.3 Assessment of Risk Associated with Closure and Rehabilitation of Dump Sites □**

Nouran Aly Gad, Eng (Misr University for Science and Technology, Egypt & MUST University, Egypt)

### **Technical Session 03.4 Combined Sewerage Network Using Hybrid Storm Drainage Technique for Smart Cities**

Nahla Hazem (Cairo University, Egypt); Sherine Ahmed El Baradei (Associate Professor, Civil Engineering Program, German University in Cairo, Egypt); Ayman Mostafa El-Degwi (Professor of Coastal, Environmental, and Harbor Engineering, Cairo University, Egypt)

## Technical Session 04: 5G and beyond

**(3:30 pm- 4:30 pm) Session Chairman : Prof. Dr. Ahmed Mahdy – ????????????????????????????????????? - Room: D4.201**

### **Technical Session 04.1 Optimal Power Allocation and Passive Beamforming of Double Active RIS-Aided Communication with AF Relay**

Mohamed Magdy Hamed Shalma, Engy Aly Maher and Ahmed E. El-Mahdy (German University in Cairo, Egypt)

### **Technical Session 04.2 Optimization of Active Reflecting Elements and Relay Gain of Double Active RIS-Aided Communication with AF Relay**

Mohamed Magdy Hamed Shalma, Engy Aly Maher and Ahmed E. El-Mahdy (German University in Cairo, Egypt)

**Technical Session 04.3 Enhanced Self-Interference Cancellation Techniques for Full-Duplex MIMO Systems**

Salma Mohamed (Orange, Egypt); Marwan Magdy (The German University in Cairo, Egypt); Maggie Shammaa, Engy Aly Maher and Ahmed E. El-Mahdy (German University in Cairo, Egypt)

**Technical Session 04.4 Performance Analysis of Large Intelligent Surface Enabled 6G Wireless Networks** □

Mariam Amgad (GUC, Egypt); Sara Farrag, Engy Aly Maher and Ahmed E. El-Mahdy (German University in Cairo, Egypt)

## Technical Session 05: Smart Cities Use Cases (1)

**(3:30 pm- 4:30 pm) Session Chairman : Prof. Dr. Tallal El-Shabrawy – ????????????????????????????????? - Room: D4.210**

**Technical Session 05.1 Smart Tourism in Smart Cities: Current Trends and Future Challenges in Sustainability and Digitization**

Raneem Wael Karram, Heidi Talaat and Hassan Soubra (German University in Cairo, Egypt)

**Technical Session 05.2 The Effect of IoT Maturity on Inventory Economic Sustainability**

Joseph A Wassef, Mona A Ali and Hany Abdelghaffar (The German University in Cairo, Egypt)

**Technical Session 05.3 LoRaPark: Making LoRaWAN Sensor Networks Accessible to a Public Audience**

Andreas Buchenscheit (Cortex Media GmbH, Germany); Frank Kargl (Ulm University, Germany)

**Technical Session 05.4 IoT-Based Smart Meter with Energy Theft Detection** □

Magdy Aboeela (Cairo University, Egypt)

## Technical Session 06: Sustainable building materials (2)

**(4:30 pm- 5:30 pm) Session Chairman : Assoc. Prof. Dr. Mohamed Koheil – Dr. Passant Ahmed - Room: D4.203**

**Technical Session 06.1 Bagging vs. Boosting: A Comparative Study on Predicting the Compressive Strength of Geopolymer Concrete**

Aya Belal (German University in Cairo GUC, Egypt); Ahmed El-Tair (German University in Cairo GUC, Egypt); Maggie Mashaly (German University in Cairo, Egypt)

**Technical Session 06.2 Predicting the Compressive Strength of Geopolymer Concrete Using Machine Learning Algorithms: Impact of Chemical Composition and Curing Conditions**

Aya Belal (German University in Cairo GUC, Egypt); Ahmed El-Tair (German University in Cairo GUC, Egypt); Maggie Mashaly (German University in Cairo, Egypt)

**Technical Session 06.3 Sustainable, Self-Cured Concrete, Thermally and Radiation Shielded for Zero Energy Houses**

Bakr Rabeeh (German University in Cairo, Egypt)

**Technical Session 06.4 Recommendation for Concrete Mixture Design and Guidelines for ECP Using Marble and RCA**

Mohamed Tarek Salah (German University in Cairo, Egypt); Moustafa A. Baraka and Ahmed Abd El Aziz (German University in Cairo (GUC), Egypt); Carsten Koenke (Bauhaus University Weimar, Germany)

## Technical Session 07: Climate Change and Environmental Conservation (1)

**(4:30 pm- 5:30 pm) Session Chairman : Prof. Dr. Ahmed Abdel Sattar – Assoc. Prof. Dr. Lamia Shihata - Room: D4.204**

### **Technical Session 07.1 Shoreline Changes and Mitigation Plans for Intelligent Cities with Emphasis on Environment-Friendly Solutions** □

Ahmed M. Zaki (Cairo University, Egypt); Ayman Mostafa El-Degwi (Professor of Coastal, Environmental, and Harbor Engineering, Cairo University, Egypt); Hanyy Gomaa Ahmed (Azhar, Egypt)

### **Technical Session 07.2 Analysis of Alternative Building Envelope Solutions to Improve Energy Efficiency**

Noha Ahmed (Benha University, Egypt)

### **Technical Session 07.3 Sustainability Evaluation of Renewable Energy Systems: A Lifecycle and Economic Perspective**

Lamia Shihata (German University in Cairo (GUC), Egypt); Mona A Ali (The German University in Cairo, Egypt)

### **Technical Session 07.4 Investigating the Correlation Between the Learning Styles of Architectural Students and Their Attraction Toward Biophilic Learning Spaces**

Fatima Ahmed Hosny, Mona Hassan Soliman and Mamdouh Farag (Fayoum University, Egypt)

## Technical Session 08: Securing Smart Cities

**(4:30 pm- 5:30 pm) Session Chairman : Assoc. Prof. Dr. Eman Ahmed Azab – Dr. Wassim Alexan - Room: D4.201**

### **Technical Session 08.1 Secure Image Communication over Cooperative Wireless Networks Employing DF Relays**

Laila Aly, Wassim Alexan, Engy Aly Maher and Mohamed Kamel Gabr (German University in Cairo, Egypt)

### **Technical Session 08.2 The Application of the Linear Congruential Generator, the Single Neuron Model and Intel's MKL to Image Encryption**

Mohamed Ahmed, Yousef Korayem, Mohamed Kamel Gabr, Wassim Alexan and Dina El-Damak (German University in Cairo, Egypt)

### **Technical Session 08.3 Image Forgery Detection Using Federated Learning on Edge Devices**

Sara Saadeldein (German University in Cairo, Egypt); Mohammed A.-Megeed Salem (German University in Cairo & Ain Shams University, Egypt); Ramez Elmasry (German University in Cairo, Egypt); Omar Fahmy (Badr University & South Ural State University, Egypt)

### **Technical Session 08.4 Development of Conceptual Model for Performing Process Mining on Blockchain Data: A Cybersecurity Approach**

Raneem Ahmed and Gamal Kassem (German University in Cairo, Egypt)

## Technical Session 09: Applications of Machine Learning in Smart Cities

**(4:30 pm- 5:30 pm) Session Chairman : Assoc. Prof. Dr. Maggie Mashaly – ??? - Room: D4.210**

### **Technical Session 09.1 Detection of Urban Residues Using Deep Learning Algorithms**

Borja Pérez López, Victoria Frutos Navarro and Sergio Campos Novoa (University Carlos III of Madrid, Spain); Alejandro Barrera (University Carlos III, Spain); Fernando Garcia and Abdulla Al-Kaff (Universidad Carlos III de Madrid, Spain)



**Technical Session 09.2 Real-Time Classification of Skin Cancer on an Edge Device**

Mohamed Dawod and Radwa E Taha (German University in Cairo, Egypt); Ranpreet Kaur (Media Design School, New Zealand); Shereen Moataz Afifi (German University in Cairo, Egypt)

**Technical Session 09.3 A Machine Learning Based Street Parking Finder**

Fadi Saber Asham and Milad Ghantous (German University in Cairo, Egypt)

**Technical Session 09.4 Remote Sensing Image Segmentation and Captioning Using Deep Learning**

Reem Mostafa Elsady (German University in Cairo, Egypt); Youssef Abdelrahman (The German University in Cairo (GUC), Egypt); Mohammed A.-Megeed Salem (German University in Cairo & Ain Shams University, Egypt)

## Technical Session 10: Design and

**(4:30 pm- 5:30 pm) Session Chairman:**

**D4.205**

**Technical session 10.1 A Conceptual Framework for Sustainable Construction in the Arab Region**

Jehan Elsamni (Ain Shams University, Egypt & Ministry of Housing, Egypt); Ibrahim Abdel Rasheed (Ain Shams University, Egypt); Hossam Elhegazy (Future University in Egypt, Egypt); Mohamed Kohail (Ain Shams University, Egypt)

**Technical session 10.2 Passive Domestic Air-Conditioning Using PCM Modules**

Nahed El Mahallawy (The German University in Cairo, Egypt & Ain Shams University, Egypt); Karim El Gayar (GUC, Egypt); Karim Ibrahim Taha (Rubitherm Technologies, Egypt)



## 2023 2nd International Conference on Smart Cities 4.0 Program

**Monday, October 23**

### Keynote Lecture 4: Geospatial at its best: Powering Smart Cities, Powering the World

**Dr. Nadine Alameh**

Executive Director of the Taylor Geospatial Institute; Member of the United Nations Committee on Experts on Global Geospatial Information Management (UNGIM); Appointed member of the US National Geospatial Advisory Committee (NGAC).

**(9:00 am- 9:30 am) Session Chairman : Prof. Dr. Hamdy Kandil - Hall: D1.0**

### Keynote Lecture 5: Designing in Dialogue - Towards Human Centered City

**Arch. Jan Blasko**

Arch. Jan Blasko, graduate of Technical University of Darmstadt, additional qualification in real estate management at the ADI School in Stuttgart. Partner at Gerkan, Marg and Partners (GMP) Hamburg, Germany .Worked at the Shanghai GMP office until 2006-2009. Lead major projects in Europe and Asia. Designed and managed various large-scale national and international projects, especially in the field of infrastructure and mixed-use high-rise projects. Industry expert for projects in the rail and aviation sector.

**(9:45 am- 10:15 am) Session Chairman : Prof. Dr. Mahmoud El-Khafif - Hall: D1.0**

### Keynote Lecture 6: Perspectives of automated vehicles in Smart Cities

**Prof. Dr. Christoph Stiller (Online session)**

Full professor of the Institute of Measurement and Control Engineering at the Karlsruhe Institute of Technology (KIT) President of the IEEE Intelligent Transportation Systems Society (2012-2013) Associate editor of the IEEE Intelligent Transportation Systems Magazine

**(10:30 am- 11:00 am) Session Chairman : Assoc. Prof. Dr. Eman Ahmed Azab - Hall: D1.0**

### Panel Discussion: Quality of Life in Smart Cities

**Prof. Ibrahim El-**

**Dimeery Dr. Nadine  
Alameh**

**Arch. Jan Blasko**

**Prof. Dr. Ahmed Madian**

**Prof. Dr. Gamal Nada**

**(1:00 pm- 2:30 pm) Session Moderator : Prof. Dr. Mona Badr – Hall : D1.0**

### Technical Session 01: Sustainable design and construction (2)

**(3:30 pm- 4:30 pm) Session Chairman : Prof. Dr. Mahmoud El-Khafif - Assoc. Prof. Dr. Ayman Nassar - Room: D4.203**

**Technical Session 01.1 Systematic Review Turning Existing Egyptian Residential Buildings into Green Ones**

Ayman Hamdy Nassar and Ali Gamal Abufarha (German University in Cairo, Egypt)

### **Technical Session 01.2 Humanizing Smart Cities: A Preconception to a Better Life for All**

Dina Shehayeb, Mennatallah Tawfik, Mirame ElSayed, Shaimaa Emad and Esraa Halawa (Nile University, Egypt)

### **Technical Session 01.3 Enhancing Sustainability in Construction: Experimental Testing and Finite Element Investigation of Falsework Ringlock Joints**

Hosny Fathallah Alqattan, Ihab Mohamed El Aghoury and Sherif Abdel-Basset Ibrahim (Ain Shams, Egypt)

### **Technical Session 01.4 Advancement of Decision-Making in Structural Design Through Optimization for Monorail Girder Design**

Ahmed El-Tair (German University in Cairo GUC, Egypt); Mahmoud K. El-Khafif (German University in Cairo, Egypt); Abdelfattah M. S. Aboulfotouh (German University in Cairo, Egypt)

## **Technical Session 02: Sustainable building materials (3)**

**(3:30 pm- 4:30 pm) Session Chairman : Prof. Dr. Nagy Hanna - Assoc. Prof. Dr. Amr El-Nemr - Room: D4.204**

### **Technical Session 02.1 Experimental Investigation on Engineered Cementitious Composites (ECC) with Different Types of Fibers**

Omnia Abo-EL-Wafa (University of Ain Shams, Egypt); Mahmoud Galal, Mohamed Kohail and Mohamed Khalaf (Ain Shams University, Egypt)

### **Technical Session 02.2 Effect of Using Treated Industrial Wastewater on the Properties of Cementitious Products**

Samuel Makram (Ain Shams University, Egypt); Engy Wadie (Ain Shams, Egypt); Ayman Shamseldein (Ain Shams University, Egypt); Hani M. Abdel Fattah Elshafie (Ain Shams University, Civil Engineering, Cairo, Egypt)

### **Technical Session 02.3 Geopolymers as a Corrosion Resistance Material: A Sustainable Solution for Smart Cities**

Salma Safwat (Ain Shams University & Nippon Koei Co., Ltd, Egypt); Alaa Mohsen (Assistant Professor, Egypt); Amr Othman (Associate Professor, Egypt); Mohamed Kohail (Ain Shams University, Egypt)

### **Technical Session 02.4 Innovative Materials for Constructing Sustainable and Smart Cities: Performance of Fiber-Reinforced Geopolymer Composites (FRGC)**

Hazim AL-Talawy, Mahmoud Galal, Ahmed Fathy Abd Aziz and Mohamed Nour EL-Din S. Fayed (Ain Shams University, Egypt)

## **Technical Session 03: Sustainable spray-based 3D printing construction Materials**

**(3:30 pm- 4:30 pm) Session Chairman : Prof. Dr. Ahmed Abdel Aziz - Dr. Passant Ahmed - Room: D4.205**

### **Technical Session 03.1 Characterization of Geopolymer Composites for 3D Printing: A Microstructure Approach**

Passant Youssef (German University in Cairo, Egypt); Muhammad S. El-Feky (National Research Center, Egypt); Ahmed M. Ragab and Mohamed I. Serag (Cairo University, Egypt)

### **Technical Session 03.2 Recycling Agriculture Waste for Liquid Deposition 3D Printing**

Ahmed Karsoun and Abdallah Ahmed (German University in Cairo, Egypt); Anke Klingner (German University in Cairo (GUC), Egypt); Khaled Tolba (German International University, Egypt); Ahmed Abd El Aziz (German University in Cairo (GUC), Egypt)

### **Technical Session 03.3 Design of Feed System Extruder for Recycled Wheat Paste 3D Printing by Experimentation and CFD Simulation**

Ahmed Karsoun (German University in Cairo, Egypt); Abdelrahman Boghdady (German International University, Egypt); Anke Klingner (German University in Cairo (GUC), Egypt); Khaled Tolba (German International University, Egypt); Ahmed Abd El Aziz (German University in Cairo (GUC), Egypt)

### **Technical Session 03.4 Rheological Properties of High-Performance SCC Using Recycled Marble Powder**

Maha Ahmed Shawki (The German University in Cairo, Egypt & The Bauhaus University in Germany, Germany); Amr ElNemr (The German University in Cairo (GUC), Egypt); Carsten Koenke (Bauhaus University Weimar, Germany); Carlos Thomas (Professor of Materials Science and Engineering, Spain)

## Technical Session 04: Smart Cities Use Cases (2)

(3:30 pm- 4:30 pm) Session Chairman : Dr. Mohamed Abdel Ghany - Room: D4.201

### **Technical Session 04.1 Bond-Graph Modeling and Simulation of Nonlinear Bioprocesses in Wastewater Treatment with Biomechatronics: A Case Study of an Egyptian Plant**

Amir R. Ali (The German University in Cairo (GUC), Egypt & PI of the Applied-Science & Robotics Laboratory for Applied- Mechatronics ARAtronics Laboratory, Egypt); Mariam Tarek (German University in Cairo, Egypt)

### **Technical Session 04.2 The Integration of Industry 4.0 Technologies in Sustainability: A Systematic Literature Review**

□ Mohamed M Nafea (German University in Cairo, Egypt); Mohamed Gasser (German International University, Egypt); Lamia Shihata (German University in Cairo (GUC), Egypt); Maggie Mashaly (German University in Cairo, Egypt)

## Technical Session 05: Autonomous Vehicles and Virtual Reality

(3:30 pm- 4:30 pm) Session Chairman : Dr. Catherine Malak - Room: D4.210

### **Technical Session 05.1 Embracing Autonomy: Virtual Reality to Foster Trust in Self-Driving Cars**

Amal Yassien (German International University in Cairo, Egypt); Nour Algokhy and Nada Sharaf (German University in Cairo, Egypt); Slim Abdennadher (German International University in Cairo, Egypt)

### **Technical Session 05.2 MPC-Based Adaptive Cruise Control with Sensor Fusion for Smart Cities**

Farida Fakher and Ashraf A Zaher (German International University, Egypt)

### **Technical Session 05.3 Building Trust in AV-To-Pedestrian Interaction: Exploring the Influence of Communication Modality Through a Virtual Reality Study**

Amal Yassien (German International University in Cairo, Egypt); Somaya Hammouda and Nada Sharaf (German University in Cairo, Egypt); Slim Abdennadher (German International University in Cairo, Egypt)

### **Technical Session 05.4 Exoskeleton Robotics Glove with A Dual Force Feedback Haptic Device for Immersive Virtual Reality Interaction**

Amir R. Ali (The German University in Cairo (GUC), Egypt & PI of the Applied-Science & Robotics Laboratory for Applied- Mechatronics ARAtronics Laboratory, Egypt); Farida Moubarak (German University in Cairo, Egypt)

## Technical Session 06: Geomatics and Geo-informatics for sustainable and smart cities

(4:30 pm- 5:30 pm) Session Chairman : Prof. Dr. Moustafa Baraka – Pro. Dr. Mona Badr - Room: D4.203

### **Technical Session 06.1 InSAR Remote Sensing for Evaluation and Monitoring of Mechanically-Stabilised Earth Walls in Fujairah**

Hamzah M. B. Al-Hashemi (Geofem Ltd. & University of Bahrain, Cyprus); Andrew Lees (Tensar International, Cyprus); Skevi Perdikou (Geofem Ltd., Cyprus); Chaido Doulala-Rigby (Tensar International, United Kingdom (Great Britain))

### **Technical Session 06.2 GIS Based Wind Resource Classification and Analyses for Potential Exploitation in Egypt**

Ahmed Agwa (German University in Cairo, Egypt); Moustafa A. Baraka (German University in Cairo (GUC), Egypt); Ahmed Abdel- Sattar (Cairo, Egypt)

### **Technical Session 06.3 Value Engineering Concept for Foundation Systems for Onshore Wind Energy Turbines**

Osama Ahmed Abdel-Azim (Ain Shams University, Egypt)

### **Technical Session 06.4 Analysis of Urban Heat Island Phenomenon in Fayoum Governorate Using Google Earth Engine and Terra- MODIS Satellite Technology**

Islam Atef (Fayoum University, Egypt); Wael Ahmed and Ahmad M. Senousi (Cairo University, Egypt); Moustafa A. Baraka (German University in Cairo (GUC), Egypt); Walid Darwish (Cairo University, Egypt)

## Technical Session 07: Climate Change and Environmental Conservation (2)

(4:30 pm- 5:30 pm) Session Chairman : Prof. Dr. Sonia E;-Serafy – Dr. Passant Ahmed - Room: D4.204

### **Technical Session 07.1 Solar Radiation Analysis: Computational Performance Analysis for the Foldable Axis of a Responsive External Skin on the South Façade**

Merna Hany Ibrahim and Shaimaa Fayed (German University in Cairo, Egypt)

### **Technical Session 07.2 Flooded Architecture as an Adaptation Tool for Climate Change Impact - A Case Study of Possible Interpretation in Egypt**

Rasha Sayed Mahmoud (Birmingham City University, United Kingdom (Great Britain)); Shereen Abou Dagher (Modern Science and Arts University, Egypt); Passant Youssef (German University in Cairo, Egypt)

### **Technical Session 07.3 Utilizing Solar Pavements as an Alternative Sustainable Renewable Energy Source Paving Material**

Ehab M Nouredin (German University in Cairo & Housing & Building Research Center, Egypt)

### **Technical Session 07.4 Digital Twins for Climate Change Adaptation in Future Smart Cities** □

Eslam Ali, Ahmed Mansour and Eslam Mohammed Abdelkader (Cairo University, Egypt); Ghasan Alfalah (King Saud University, Saudi Arabia); Nehal Elshaboury (Housing and Building National Research Center, Egypt); Abobakr Al-Sakkaf (Concordia University, Canada)

## Technical Session 08: Intelligent building management system (1)

(4:30 pm- 5:30 pm) Session Chairman : Prof. Dr. Karim El-Dash – Assoc. Prof. Dr. Ayman Nassar - Room: D4.205

### **Technical Session 08.1 Investigating Awareness and Acceptance of IoT Smart Home Applications for Greater Cairo Residents**

Doha Magdy Eissa and Nahla N. Makhoulf (Cairo University, Egypt)

### **Technical Session 08.2 IoT Platform for Facility Management Practices Using BIM and Blockchain Concept Integration**

Nada Elmansy (German University in Cairo, Egypt & Amazon, Egypt); Moustafa A. Baraka (German University in Cairo (GUC), Egypt)

### **Technical Session 08.3 On-Site Impact Factor and Dynamic Response Estimation Using Image Processing for Quay Gantry Crane** Ahmed Noshay (Faculty of Engineering, Ain Shams University, Cairo, Egypt); Ezzeldin Kamel Mohamed (National Water Research Center, Egypt); Ayman Hosny (Ain Shams University, Egypt)

### **Technical Session 08.4 Integrated Agile-Facility Management Model for Improving Performance in Construction Projects**

Ibram Sedhom (New Mansoura University & Ain Shams University, Egypt); Laila M. Khodeir and Fatma Fathy (Ain Shams University, Egypt)

## Technical session 09: Localization and Environment Mapping

(4:30 pm- 5:30 pm) Session Chairman : Dr. Rimon Elias - Room: D4.201

### **Technical session 09.1 Efficient Room Plan Navigation for Robot Vacuum Cleaner Using vSLAM Algorithms**

Ibrahim Ayman Moussa and Nouran Waleed Ahmed (German University in Cairo, Egypt); Tallal Elshabrawy (The German University in Cairo, Egypt); Mohamed Ashour (GUC, Egypt)

**Technical session 09.2 Localization and Recommendation System IOT-Based Solution for Smart Supermarkets**

Nouran Waleed Ahmed (German University in Cairo, Egypt); Omar Kamal (Canadian International College (CIC), Egypt); Mohamed G. Anany (Canadian International College, Egypt); Wafaa Mahmoud, WR (Canadian International Colledge, Egypt)

**Technical session 09.3 Indoor Localization Through Depth Estimation**

Mennatalla Yasser Khalifa and Rimon Elias (German University in Cairo, Egypt); Christian Schindelhauer (University of Freiburg & Rechnernetze und Telematik an der Albert-Ludwigs-Universität Freiburg, Germany)

**Technical session 09.4 Depth Estimation Using Homographic Transformation**

Rimon Elias and Mennatalla Yasser Khalifa (German University in Cairo, Egypt); Christian Schindelhauer (University of Freiburg & Rechnernetze und Telematik an der Albert-Ludwigs-Universität Freiburg, Germany)

## Technical Session 10: Data Engineering and Smart Cities

**(4:30 pm- 5:30 pm) Session Chairman : Prof. Dr. Mervat Abou El-Kheir - Room: D4.210**

**Technical Session 10.1 Cloud Based Data Warehousing: Challenges and Criteria**

Farah Yasser (German University in Cairo, Egypt); Ayman Alserafi (German University in Cairo (GUC) & German International University (GIU), Egypt)

**Technical Session 10.2 Optimizing File Similarity Search Techniques in Data Lakes Using Parallel Processing and Big Data Frameworks**

Sara Sherif Daoud Saad (German University in Cairo, Egypt); Ayman Alserafi (German University in Cairo (GUC) & German International University (GIU), Egypt)

**Technical Session 10.3 Custom Model and Testing Dataset for Age and Gender Detection**

Hana El Monayeri (German University in Cairo, Egypt); Youssef Abdelrahman (The German University in Cairo (GUC), Egypt); Mohammed A.-Megeed Salem (German University in Cairo & Ain Shams University, Egypt); Shereen Moataz Afifi (German University in Cairo, Egypt)

**Technical Session 10.4 Digital Twin of Cairo: Opportunities and Challenges**

Abdelrahman N Abdallah (The German University in Cairo, Egypt); Milad Ghantous (German University in Cairo, Egypt); Youssef Aboulyours (The German University in Cairo, Egypt); Hassan Soubra (ECE, France)

## 2023 2nd International Conference on Smart Cities 4.0 Program

**Tuesday, October 24**

### Keynote Lecture 7: Delivering Smart City Solutions: Approaches to Connect Visions, Technologies and Citizens

**Prof. Dr. Iris Belle**

Prof. Dr. Iris Belle is a full Professor at Stuttgart University of Applied Sciences, Faculty of Architecture and Design and serves as the Dean of Studies at the International Master Programme Smart City Solutions.

(11:15 am – 11:45 am) Session Chairman : Dr. Nada Sharaf - GIU - Room:M.014

### Keynote Lecture 8: Egyptian Code for Smart Cities

**Prof. Mohamed Aref**

Prof. Mohamed Aref is a professor at the Housing and Building National Research Center (HBRC) -Ministry of Housing, Utilities and Urban Communities in Egypt. Head of the Egyptian Code Committee for Sustainable and Smart Cities. Member of Smart Cities Strategy committee in Egypt- in cooperation with World Bank (WB) and Ministry of Housing, Utilities and Urban Communities.

(11:45 am – 12:15 pm) Session Chairman : Dr. Mohamed Abdel Ghany – GIU - Room: M.014

### Technical Session 01: Sustainable design and construction (3)

(1:15 pm- 2:15 pm) Session Chairman : Prof. Dr. Ahmed Maher – Dr. Yasmina Sarhan - GIU - Room: M3.414

#### **Technical Session 01.1 *Investigating the Effect of Different Steel Fibers Content on the Mechanical Properties of Ultra-High Strength Concrete Towards a Dense Composition***

Ahmed El-Tair (German University in Cairo GUC, Egypt)

#### **Technical Session 01.2 *Technological and Environmental Decisions for Smart Cities***

Marly Sieffen (German University in Cairo, Egypt); Hussam Hussein Salama (The German University in Cairo, Egypt); Ayman Hamdy Nassar (German University in Cairo, Egypt)

#### **Technical Session 01.3 *Enhancing Sustainability and Resource Efficiency Through Upcycling: A Comprehensive Review and Analytical - Based Framework for Evaluating Building Upcycled Products***

Yasmina Sarhan (German University, Egypt); Asmaa Gelila, Sarah Kaseir, Eman Farouk, Michael Eichner and Nouran Abdelkhalik (German University in Cairo, Egypt)

#### **Technical Session 01.4 *Building a Sustainable Future in Egypt: A Comprehensive Checklist Based on Critical Analysis of Selected International and National Certification Systems***

Pillara Mohamed Mouftah (Lecturer Assistant, Egypt)



## Technical Session 02: Intelligent building management system (2)

**(1:15 pm- 2:15 pm) Session Chairman : Prof. Dr. Moustafa Baraka – Dr. Mohamed Salama - GIU - Room: M3.420**

### **Technical Session 02.1 A Hyber Parametrized Bayesian Optimization-Based Deep Learning Model for Analyzing Heating and Cooling Loads in Energy Efficient Buildings** □

Eslam Mohammed Abdelkader (Cairo University, Egypt); Abobakr Al-Sakkaf (Concordia University, Canada); Nehal Elshaboury (Housing and Building National Research Center, Egypt); Eslam Ali (Cairo University, Egypt); Ghasan Alfalah (King Saud University, Saudi Arabia); Ahmed Mansour (Cairo University, Egypt)

### **Technical Session 02.2 Facility Management and Operational Performance of Mosque Buildings**

Maryam El-Maraghy, Mahmoud Metawie and Mohamed Marzouk (Cairo University, Egypt)

### **Technical Session 02.3 Building Information Modeling Course for Senior Architecture and Civil**

**Undergraduates at GUC** Moustafa A. Baraka (German University in Cairo (GUC), Egypt); Mahmoud K. El-Khafif (German University in Cairo, Egypt); Walid ElShamy (German University in Cairo, Egypt)

### **Technical Session 02.4 Towards Building Information Modeling Within Asset Management Using Terrestrial Laser Scanning**

Moustafa A. Baraka (German University in Cairo (GUC), Egypt); Ola Fouad (German University in Cairo, Egypt)

## Technical Session 03: Computer Vision in Smart Cities

**(1:15 pm- 2:15 pm) Session Chairman : - GIU - Room: M3.419**

### **Technical Session 03.1 Research on a Method for Analyzing Parking Lot Usage Using Video Information**

Kazuma Kimura, Nobutada Fujii, Watanabe Ruriko, Shunsuke Watanabe, Daisuke Kokuryo and Toshiya Kaihara (Kobe University, Japan); Akira Tada and Takayuki Nakamura (Kobe City Government, Japan)

### **Technical Session 03.2 Web Pages Analysis and Classification Using Computer Vision**

Mariam Mohamed El Madbouly and Youssef Abdelrahman (The German University in Cairo (GUC), Egypt); Mohammed A.-Megeed Salem (German University in Cairo & Ain Shams University, Egypt)

## Technical Session 04: Intelligent Transportation/Dones Systems

**(1:15 pm- 2:15 pm) Session Chairman : - GIU - Room: M3.425**

### **Technical Session 04.1 Dynamic Prioritization in Constrained Routing for Intelligent Transportation Systems**

Youssef Aboulyour (The German University in Cairo, Egypt); Hassan Soubra (ECE, France)

### **Technical Session 04.2 Smartphone-Based Real-Time Bridge Health Monitoring System for Smart Cities 4.0 Using Four-Wheeled Robot and Indirect Vibrational Data from Moving Vehicles**

Amir R. Ali (The German University in Cairo (GUC), Egypt & PI of the Applied-Science & Robotics Laboratory for Applied- Mechatronics ARAtronics Laboratory, Egypt); Alaa Mohamed Ibrahim Farahat (German University in Cairo, Egypt); Moustafa A. Baraka (German University in Cairo (GUC), Egypt)

### **Technical Session 04.3 Real-Time Control of a Rescue Drone for Efficient Firefighting Operations: Embedded Systems and Stateflow Integration**

Alaa A. Ali (German University in Cairo, Egypt); Eman A. Abdallah (GUC, Egypt); Mirna S. Kostandy, Lobna T. Aboserre and Farida Moubarak (German University in Cairo, Egypt)

### **Technical Session 04.4 Navigation of Partially Observable Quadrotor in Smart Cities Based on UCT**

Mohamed Ezzat Farghal and Ayman A. El-Badawy (German University in Cairo, Egypt)



## Technical session 05: Sustainable building materials (4)

(2:30 pm- 3:30 pm) Session Chairman : Prof. Dr. Ahmed Abdel Aziz – Dr. Passant Ahmed - GIU - Room: M3.414

### **Technical session 05.1 Investigation on the Key Mix Design Parameters of Slag-Based Geopolymer Concrete**

Nada M Nagy, Ismail Amer, Mohamed Kohail and El-Sayed Abd El Raouf Nasr (Ain Shams University, Egypt)

### **Technical session 05.2 Utilization of Steel Slag as Partial Replacement for Coarse Aggregate in Concrete**

Mohmaed Elwi (German University in Cairo (GUC), Egypt); Amr ElNemr (The German University in Cairo (GUC), Egypt); Ahmed Shash and Ahmed Babiker (German University in Cairo, Egypt)

### **Technical session 05.3 Integration Between Sustainable Construction Materials and Sustainable Furniture Design**

Mohamed Tarek Salah (German University in Cairo, Egypt); Moustafa A. Baraka and Ahmed Abd El Aziz (German University in Cairo (GUC), Egypt); Carsten Koenke (Bauhaus University Weimar, Germany); Alaa El Anssary (German University in Cairo, Egypt)

### **Technical session 05.4 Effect of Ingredients Adding Sequences on Rheological Properties of Alkali-Activated Slag Paste**

Nourhan Ali (Concordia University, Canada & Ain Shames University, Egypt); Ahmed Soliman (Concordia University, Canada)

## Technical Session 06: Big data analysis in smart cities civil works

(2:30 pm- 3:30 pm) Session Chairman : Dr. Ehab Nour El-Din – Dr. Ibrahim Lotfy - GIU - Room: M3.420

### **Technical Session 06.1 Process for Control Cost Overrun Using Artificial Intelligence (AI), Earned Value Management (EVM) Analysis and Logistic Sustainability**

Noha Demerdash Raslan (German University in Cairo, Egypt); Ahmed Hamdy Abdelaziz (German University in Cairo & Mac group, Egypt); Ayman Hamdy Nassar (German University in Cairo, Egypt)

### **Technical Session 06.2 Assessing Seismic Performance of Mid-Rise Reinforced Concrete Buildings Using Fragility Curves**

Ahmed Mohamed Naiel, sr. (German University in Cairo, Egypt)

### **Technical Session 06.3 Traffic Flow Evaluation for Platoons of Autonomous Vehicles Using Constant Time-Gap Policy**

Ahmed Gomaa Hussein, Tamer Attia and Mostafa Yacoub (Millitary Technical College, Egypt)

### **Technical Session 06.4 Leveraging Network Analysis to Understand Centralities of the Cairo Metro System Enhancing Transportation Planning and Management in Cairo**

Ahmad M. Senousi and Wael Ahmed (Cairo University, Egypt); Moustafa A. Baraka (German University in Cairo (GUC), Egypt); Islam Atef (Fayoum University, Egypt); Walid Darwish (Cairo University, Egypt)

## Technical Session 07: Renewable Energies

(2:30 pm- 3:30 pm) Session Chairman : GIU - Room: M3.419

### **Technical Session 07.1 Life Cycle Assessment for Ground Source Heat Pump in Comparison with Traditional Heat Pumps- a Case Study in Egypt**

Ahmed ElSayed, Youssef Ghaly, Ziad Tarek, Khaled Ali, Youssef Mohamed, Rogeih Emad, Nada Ashraf, Amr Y. Elbanhawy and Walid Aboelsoud (Ain Shams University, Egypt)

### **Technical Session 07.2 Comparison of Multilevel and Differential Inverters; A Case-Study Concerning Complexity, Power Quality, and Efficiency**

Ahmed I. M. Ali (South Valley University & Faculty of Engineering, Egypt); Abdelfatah Ali (American University of Sharjah, United Arab Emirates & South Valley University, Egypt); Mostafa Shaaban (American University of Sharjah, United Arab Emirates)

### **Technical Session 07.3 Control of LCL-Filtered Grid-Side Converters Using State Feedback for Wind Energy Applications**

Kareem A. Nour Al-Deen (German International University & Kuwait University, Egypt); Hussain A. Hussain and Mohamad Zribi (Kuwait University, Kuwait)

### **Technical Session 07.4 Microgrid Central Protection for Smart Cities Based on the Phase Angle Variations Between Voltage and Current Signals** □

Mohamed Ahmed Hassan Elsayed, Sr. (Professor of Electric Power, Egypt & Cairo University, Egypt); Mohamed Mahfouz (Helwan University, Egypt)

## Technical Session 08: HCI in Smart Cities

(2:30 pm- 3:30 pm) Session Chairman : Dr. Wael Abou El-Sadaat - GIU - Room: M3.424

### **Technical Session 08.1 Revisiting the Efficacy of Image-Based Recognition of Arabic Handwriting: The Case of Isolated Letters**

Ahmed M. H. Abdelfattah (Ain Shams University, Egypt & The German University in Cairo (GUC), Egypt); Amr Fawzy (GUC, Egypt)

### **Technical Session 08.2 Revisiting the Efficacy of Image-Based Recognition of Arabic Handwriting: The Case of Whole Scripts**

Ahmed M. H. Abdelfattah (Ain Shams University, Egypt & The German University in Cairo (GUC), Egypt); Adham Mohamed Amr (GUC, Egypt)

### **Technical Session 08.3 Enhancing Domain Generalization for Unsupervised Anomalous Sound Detection Through Domain Classification Loss Integration**

Youssef A. Khadragey and Hisham Othman (German University in Cairo, Egypt)

### **Technical Session 08.4 Fake Emotion Detection Using Affective Cues and Speech Emotion Recognition for Improved Human Computer Interaction**

Omar S Badr, Sr. (German University in Cairo, Egypt); Nada Ibrahim (The German University in Cairo, Egypt); Amr Elmougy (American University in Cairo, Egypt).

## Closure: Closing Ceremony and Certificates for Exhibitors

(3:30 to 4:30 PM) Room: GIU-M.014