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## Conference Co-Chairmen



Anatoliy Sachenko,  
Research Institute for Intelligent  
Computer Systems,  
Ternopil National Economic University,  
Ternopil, Ukraine



Kondo H. Adjallah,  
Ecole Nationale d'Ingénieurs de  
Metz, Laboratory of Conception,  
Optimisation and Modelling of Systems,  
University of Lorraine, Metz, France

## International Program Committee Co-Chairmen



Francesca Guerriero  
Department of Mechanical, Energy and  
Management Engineering, University of  
Calabria, Italy



Carsten Wolff  
Institute for the Digital Transformation  
of Application and Living  
Environments, University of Applied  
Sciences and Arts, Dortmund, Germany

## Message from the IDAACS 2019 Co-Chairmen

It's our pleasure to welcome all attendees the 2019 IEEE 10<sup>th</sup> International Conference on Intelligent Data Acquisition and Advanced Computing Systems: Technology and Applications (IDAACS), [www.idaacs.net](http://www.idaacs.net), which will be held in Metz, France, 18-21 September, 2019.

The main goal of IDAACS'2019 is to provide a forum for high-quality reports on the state-of-the-art Theory, Technology and Applications of Intelligent Data Acquisition and Advanced Computer Systems as used in different areas. A family of IDAACS Workshops has already been created since the IEEE 1st IDAACS Workshop was held in Foros, Crimea, Ukraine, July 1-4, 2001. After that the following IDAACS Conferences were held in Lviv, Ukraine, 2003, Sofia, Bulgaria, 2005, Dortmund, Germany, 2007, Rende (Cosenza), Italy, 2009, Prague, Czech Republic, 2011, Berlin, Germany, 2013, Warsaw, Poland, 2015, Bucharest, Romania, 2017. Moreover, IDAACS Symposia on Wireless Systems (SWS) were held in Offenburg, Germany in 2012, 2014, 2016 as well as in Lviv, Ukraine in 2018.

The IDAACS 2019 Conference is organized by IEEE Ukraine Section I&M / CI Joint Societies Chapter and the Research Institute for Intelligent Computer Systems, Ternopil National Economic University (TNEU) and V.M. Glushkov Institute of Cybernetics, National Academy of Sciences, Ukraine in cooperation with the ENIM (Ecole Nationale d'Ingénieurs de Metz) and LCOMS (Laboratory of Conception, Optimisation and Modelling of Systems) of University of Lorraine, France.

It is supported and sponsored by IEEE Ukraine Section, IEEE France Section, MDPI Sensors, Fondation ENIM, Metz Metropole, River Publishers, so we express our sincere gratitude to each of them.

The International Program Committee of IDAACS'2019 is co-chaired by Francesca Guerriero, Italy and Carsten Wolff, Germany, many thanks to both of them. In addition, we express our gratitude for all members of IPC. There were submitted the 314 papers by authors from the 42 countries. Many thanks to all the reviewers, their names are listed in the proceedings and their contribution to the quality and success of this Conference. After the reviewing process, the 213 papers were accepted for a publication in the Conference proceedings. All the presentations are organized into the 27 oral and the 3 poster sessions. In addition, three prominent experts are invited to deliver keynotes during plenary sessions: Jürgen Sieck, University of Applied Sciences, Berlin, Germany; Kurosh Madani, Paris-Est Créteil Val-de-Marne University, France; and Fabio Scotti, University of Milan, Italy. We appreciate their contribution to the IDAACS 2019 Conference very much.

Besides, the IDAACS 2019 remained its peculiarity providing seven special streams, and Workshops on Cyber Physical Systems and Internet of Things with 11 sessions.

Metz is the economic heart of the Lorraine region, it's home to the University of Lorraine. The university has over 60000 students, close to 6900 staff members, among which 3700 faculty and searchers, 43 teaching departments, 60 research centers, and several campuses in the entire region. Several important universities are mentioned such as the Pole Universitaire Européen de Nancy Metz, Georgia Tech Lorraine, Ecole Nationale d'Ingénieurs de Metz (ENIM). The city economy relies on the sectors of commerce, tourism, information technology, and the metallurgical and automotive industries. The city is a center for applied research and development in the materials sector, notably in metallurgy and metallography.

Lastly, we would like to thank all our friends and colleagues from the previous IDAACS' conferences as well as new participants coming in Metz to discuss the latest achievements in the fields of Intelligent Data Acquisition and Advanced Computer Systems!

Enjoy attending the IDAACS'19 conference and the charm city of Metz!

Anatoliy Sachenko



Kondo H. Adjallah



## **IDAACS'2019 Conference Committee**

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### **Conference Co-Chairmen:**

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Francesca Guerriero, Italy                      Carsten Wolff, Germany

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Igor Kotenko, Russian Federation

### **Coordinators of the Special Stream in Machine Learning**

Yevgeniy Bodyanskiy, Ukraine

Eduard Petlenkov, Estonia

### **Coordinators of the Special Stream in Wireless Systems**

Axel Sikora, Germany

Uwe Grossmann, Germany

### **Coordinators of the Special Stream in Project Management**

Carsten Wolff, Germany

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### **Coordinators of the Special Stream in Smart Buildings and Smart Cities**

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Grigore Stamatescu, Romania

### **Coordinators of the Special Stream in Human-Machine Interaction (in Education)**

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Galina Tabunshchyk, Ukraine

### **Coordinator of the Workshop Cyber Physical Systems and Internet of Things**

Vyacheslav Kharchenko, Ukraine

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Volodymyr Kochan, Ukraine  
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Yuriy Kondratenko, Ukraine  
Ah Lian Kor, UK  
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Nataliia Kussul, Ukraine  
Alexandr Kuznetsov, Ukraine  
Miroslav Kvassay, Slovak Republic  
Oleksandr Letychevskyi, Ukraine  
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Volodymyr Lytvynenko, Ukraine  
Leonid Lyubchik, Ukraine  
Choubeila Maaoui, France

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Caroline Cappella, France

## IDAACS'2019 Conference Timetable

<b>Wednesday, September 18, 2019</b>				
<b>6:00 PM – 8:00 PM</b>	<i>Hall of lobby</i> <b>Registration and Welcoming Reception Party</b>			
<b>Thursday, September 19, 2019</b>				
<b>7:40 AM – 4:00 PM</b>	<i>Hall of lobby</i> <b>Registration</b>			
<b>7:40 AM – 8:00 AM</b>	<i>Hall of lobby</i> <b>Welcome Coffee</b>			
<b>8:00 AM – 8:20 AM</b>	<i>Room A (Auditorium)</i> <b>Opening</b>			
<b>8:20 AM – 9:10 AM</b>	<i>Room A (Auditorium)</i> <b>Plenary Session T1</b> Jürgen Sieck “Augmented and Virtual Reality Applications for Culture and Tourism” Chair: Anatoliy Sachenko			
<b>9:10 AM – 10:50 AM</b>	<b>Room A Session TA1:</b> 1. Advanced Instrumentation and Data Acquisition Systems Co-Chairs: Peter Schulz, Piotr Bilski	<b>Room B Session TB1:</b> 7. Data Analysis and Modeling Chair: Miki Sirola	<b>Room C Session TC1:</b> 15. Pattern Recognition, Digital Image and Signal Processing Co-Chairs: Ivo Draganov, Aleksander Doudkin	<b>Room D Session TD1:</b> 19. Special Stream in Cyber Security Co-Chairs: George Markowsky, Igor Kotenko
<b>10:50 AM – 11:10 AM</b>	<i>Hall of lobby</i> <b>Coffee Break</b>			
<b>11:10 AM – 12:50 PM</b>	<b>Room A Session TA2:</b> 2. Advanced Mathematical Methods for Data Acquisition and Computing Systems Chair: Leonid Lyubchyk	<b>Room B Session TB2:</b> 10. Information Computing Systems for Education and Commercial Applications Chair: Sergii Telenyk	<b>Room C Session TC2:</b> 28. Special Stream in Wireless Systems Co-Chairs: Uwe Grossmann, Axel Sikora	<b>Room D Session TD2:</b> 24. Special Stream in Project Management Co-Chairs: Carsten Wolff, Jose Ramon Otegi-Olaso
<b>12:50 PM – 1:50 PM</b>	<i>Show Room</i> <b>Lunch</b>			

<b>1:50 PM – 2:30 PM</b>	<i>Hall of lobby</i> <b>Poster session TP</b> Chair: Volodymyr Opanasenko		<b>Room A</b> <b>Wieslaw Winiiecki Memorial Session</b> <b>Co-Chairs:</b> Anatoliy Sachenko, George Markowsky, Piotr Bilski	
<b>2:30 PM – 4:10 PM</b>	<b>Room A</b> <b>Session TA3:</b> 5. Computer Systems for Healthcare and Medicine Chair: Francesca Guerriero	<b>Room B</b> <b>Session TB3:</b> 23. Special Stream in Machine Learning Co-Chairs: Yevgeniy Bodyanskiy, Eduard Petlenkov	<b>Room C</b> <b>Session TC3:</b> 28. Special Stream in Wireless Systems Co-Chairs: Uwe Grossmann, Axel Sikora	
<b>4:10 PM – 5:00 PM</b>	<b>Transfer to city tour in downtown</b>			
<b>5:00 PM – 7:00 PM</b>	<b>City Tour</b>			

<b>Friday, September 20, 2019</b>				
<b>8:00 AM – 4:00 PM</b>	<i>Hall of lobby</i> <b>Registration</b>			
<b>8:00 AM – 8:30 AM</b>	<i>Hall of lobby</i> <b>Welcome coffee</b>			
<b>8:30 AM – 10:10 AM</b>	<b>Room A Session FA1:</b> 1. Advanced Instrumentation and Data Acquisition Systems Chair: Zbigniew Kokosinski	<b>Room B Session FB1:</b> 7. Data Analysis and Modeling Chair: Oleksandr Sudakov	<b>Room C Session FC1:</b> 15. Pattern Recognition, Digital Image and Signal Processing Co-Chairs: Choubeila Maaoui, Agata Manolova	<b>Room D Session FD1:</b> 19. Special Stream in Cyber Security Chair: Oleksandr Letychevskiy
<b>10:10 AM – 10:30 AM</b>	<i>Hall of lobby</i> <b>Coffee Break</b>			
<b>10:30 AM – 12:10 PM</b>	<b>Room A Session FA2:</b> 2. Advanced Mathematical Methods for Data Acquisition and Computing Systems Chair: Vladimir Oleshchuk	<b>Room B Session FB2:</b> 10. Information Computing Systems for Education and Commercial Applications Chair: Alexandre Sava	<b>Room C Session FC2:</b> 26. Special Stream in Smart Buildings and Smart Cities Co-Chairs: Dan Popescu, Grigore Stamatescu	<b>Room D Session FD2:</b> 22. Intelligent Robotics and Sensors Chair: Yuriy Kondratenko
<b>12:10 PM – 1:00 PM</b>	<i>Room A (Auditorium)</i> <b>Plenary Session F1</b> Kurosh Madani “Machine-Awareness Through a Machine-Learning Based Humanization of Robots’ Gazing” Chair: Robert E. Hiromoto			
<b>1:00 PM – 2:00 PM</b>	<i>Show Room</i> <b>Lunch</b>			
<b>2:00 PM – 2:40 PM</b>	<i>Hall of lobby</i> <b>Poster Session FP</b> Chair: Evgeny Pyshkin		<b>Room A Domenico Grimaldi Memorial Session</b> Co-Chairs: Anatoliy Sachenko, George Markowsky, Francesca Guerriero	



<b>2:40 PM – 4:20 PM</b>	<b>Room A Session FA3:</b> 20. Special Stream in Human-Machine Interaction Co-Chairs: Peter Arras, Galyna Tabunshchyk	<b>Room B Session FB3:</b> 14. Internet of Things Chair: Robert E. Hiromoto	<b>Room C Session FC3:</b> 29. Workshop on Cyber Physical Systems and Internet of Things Chair: Vyacheslav Kharchenko	<b>Room D Session FD3:</b> 9. High Performance Computing Chair: Vadym Mukhin
<b>7:00 PM- 10:00 PM</b>	<p style="text-align: center;"><i>Orangerie, Arsenal building in Metz downtown</i>  <b>Conference Dinner</b></p>			

<b>Saturday, September 21, 2019</b>			
<b>8:00 AM – 1:00 PM</b>	<i>Hall of lobby</i> <b>Registration</b>		
<b>8:00 AM – 8:30 AM</b>	<i>Hall of lobby</i> <b>Welcome coffee</b>		
<b>8:30 AM – 9:20 AM</b>	<i>Room A (Auditorium)</i> <b>Plenary Session S1</b> Fabio Scotti “Artificial Intelligence for Biometric Systems: Applications, Innovative Systems, and Trends” Chair: Kondo H. Adjallah		
<b>9:20 AM – 11:00 AM</b>	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none; text-align: center;"> <b>Room A</b> <b>Session SA1:</b> 19. Special Stream in Cyber Security Chair: Vitaly Klyuev </td> <td style="width: 50%; border: none; text-align: center;"> <b>Room B</b> <b>Session SB1:</b> 25. Special Stream in Quantum Computing and Post-Quantum Cryptography Chair: Yevhen Vasiliu </td> </tr> </table>	<b>Room A</b> <b>Session SA1:</b> 19. Special Stream in Cyber Security Chair: Vitaly Klyuev	<b>Room B</b> <b>Session SB1:</b> 25. Special Stream in Quantum Computing and Post-Quantum Cryptography Chair: Yevhen Vasiliu
<b>Room A</b> <b>Session SA1:</b> 19. Special Stream in Cyber Security Chair: Vitaly Klyuev	<b>Room B</b> <b>Session SB1:</b> 25. Special Stream in Quantum Computing and Post-Quantum Cryptography Chair: Yevhen Vasiliu		
<b>11:00 AM – 11:30 AM</b>	<i>Hall of lobby</i> <b>Coffee Break &amp; Poster session SP</b> Chair: Roman Kochan		
<b>11:30 AM – 1:10 PM</b>	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none; text-align: center;"> <b>Room A</b> <b>Session SA2:</b> 8. Embedded Systems Co-Chairs: Camel Tanougast, Alexander Drozd </td> <td style="width: 50%; border: none; text-align: center;"> <b>Room B</b> <b>Session SB2:</b> 7. Data Analysis and Modeling Chair: Miroslav Kvassay </td> </tr> </table>	<b>Room A</b> <b>Session SA2:</b> 8. Embedded Systems Co-Chairs: Camel Tanougast, Alexander Drozd	<b>Room B</b> <b>Session SB2:</b> 7. Data Analysis and Modeling Chair: Miroslav Kvassay
<b>Room A</b> <b>Session SA2:</b> 8. Embedded Systems Co-Chairs: Camel Tanougast, Alexander Drozd	<b>Room B</b> <b>Session SB2:</b> 7. Data Analysis and Modeling Chair: Miroslav Kvassay		
<b>1:10 PM – 2:10 PM</b>	<i>Show Room</i> <b>Lunch</b>		
<b>2:10 PM – 3:10 PM</b>	<i>Room A (Auditorium)</i> <b>Round Table and Closing Ceremony</b> Co-Chairs: George Markowsky, Anatoliy Sachenko, Kondo H. Adjallah		

## Conference Technical Program

### Wednesday, September 18, 2019

6:00 PM – 8:00 PM

**Registration and Welcoming Reception:**

### Thursday, September 19, 2019

7:40 AM – 4:00 PM

**Registration:** *Hall of lobby*

7:40 AM – 8:00 AM

**Welcome Coffee:** *Hall of lobby*

8:00 AM – 8:20 AM

**Opening.**

Room: A

8:20 AM – 9:10 AM

**Room:** *Room A (Auditorium)*

**Plenary Session T1**

**Jürgen Sieck “Augmented and Virtual Reality Applications for Culture and Tourism”**

*Chair: Anatoliy Sachenko*

9:10 AM – 10:50 AM

**Session TA1: 1. Advanced Instrumentation and Data Acquisition Systems**

Room: A

**Co-Chairs:** Peter Schulz, Piotr Bilski

1. #076. Identification of Mobile Terminal with Femtocell on Drone for Civil Protection Applications. *Roberta Avanzato, Francesco Beritelli, Mario Vaccaro.*
2. #240. Field Evaluation of Low Cost Sensors Array for Air Pollution Monitoring. *Rachid Laref, Etienne Losson, Alexandre Sava, Maryam Siadat.*

3. #185. Analysis of Transient State Signatures in Electrical Household Appliances. *Augustyn Wójcik, Wiesław Winiecki, Robert Łukaszewski, Piotr Bilski.*
4. #101. Simulation of Gas Flow for Welding Process Control in the Arctic Environment. *Alexey Lagunov, Anton Losunov.*
5. #195. A Cost-Efficient and Continuous Ethernet Cable Diagnosis Technique based on Undersampling. *Ahmed Yahia Kallel, Sebastian Uziel, Manuel Schappacher, Axel Sikora, Thomas Keutel, Olfa Kanoun.*

9:10 AM – 10:50 AM

### **Session TB1: 7. Data Analysis and Modeling**

Room: B

**Chair:** Miki Sirola

1. #040. Data-Driven Fault Detection and Identification in Wind Turbines Through Performance Assessment. *Boudy Bilal, Kondo Hloindo Adjallah, Alexandre Sava.*
2. #228. Towards Reduction in MOOCs Dropouts: An Agent-Based Model for Social Network Based Collaborative Learning. *Lakshmi Sunil Prakash, Kashif Zia, Ismail Khalil.*
3. #018. Modeling of Cognitive Evolution. *Vladimir G. Red'ko.*
4. #063. Using Clustering Analysis for Determination of Scattering Kernels in X-ray Imaging. *Anton Danyk, Serhii Radchenko, Andrii Netroba, Oleksandr Sudakov.*
5. #007. Indoor Emergency Evacuation Model Based on Artificial Bee Colony Algorithm. *Xinlu Zong, Jiayuan Du, Wei Liu, Lu Zhang, Qian Huang.*

9:10 AM – 10:50 AM

### **Session TC1: 15. Pattern Recognition, Digital Image and Signal Processing**

Room: C

**Co-Chairs:** Ivo Draganov, Aleksander Doudkin

1. #011. Accuracy Enhancement of a Blind Image Steganalysis Approach Using Dynamic Learning Rate-Based CNN on GPUs. *Eslam M. Mustafa, Mohamed A. Elshafey, Mohamed M. Fouad.*
2. #013. The Extended Generalized Neo-Fuzzy Network and Its Online Learning in Image Recognition Problem. *Nonna Kulishova, Yevgeniy Bodyanskiy, Iryna Pliss.*
3. #188. Fire Dispersal Estimation in Videos using Background Modelling and Subtraction by Tensor Decomposition. *Ivo R. Draganov, Rumen P. Mironov, Agata H. Manolova, Nikolay N. Neshov.*
4. #058. Low- and High-level Methods for Tree Segmentation. *László Czúni, Karim Ben Alaya.*
5. #017. Low Cost Outdoors WSN Parking System for Metropolitan Areas Based on RSS. *Mauricio Postigo-Málaga, Luis Porras Figueroa, José Chilo.*

9:10 AM – 10:50 AM

**Session TD1: 19. Special Stream in Cyber Security**

Room: **D**

**Co-Chairs:** George Markowsky, Igor Kotenko

1. #299. Two-Level Algebraic Method for Detection of Vulnerabilities in Binary Code. *Oleksandr Letychevskiy.*
2. #015. Chaotic Map Synchronization by Common-Mode Truncation Pulses for Secure Communications. *John Kalomiros, Stavros G. Stavrinides.*
3. #056. New Direction for Malware Detection Using System Features. *Štefan Balogh, Ján Mojžiš.*
4. #049. Network Protocols Determination Based on Raw Data Analysis for Security Assessment under Uncertainty. *Diana Gaifulina, Andrey Fedorchenko, Igor Kotenko.*
5. #039. Cyber Resilience Approach Based on Traffic Engineering Fast ReRoute with Policing. *Oleksandr Lemeshko, Oleksandra Yeremenko, Maryna Yevdokymenko, Anastasiia Shapovalova, Ahmad M. Hailan, Amal Mersni.*

10:50 AM – 11:10 AM

**Coffee Break:** *Hall of lobby*

11:10 AM – 12:50 PM

**Session TA2: 2. Advanced Mathematical Methods for Data Acquisition and Computing Systems**

Room: **A**

**Chair:** Leonid Lyubchik

1. #077. Lattice Data Analytics and an Exploratory Analysis of the Carver2 Dataset. *Linda Markowsky, George Markowsky.*
2. #273. Data Transmission Scheme Based on Publish/Subscribe in Workshop. *Tangxiao Yuan, Huafei Fan, Huifen Wang, Kondo Hloindo Adjallah, Zhouhang Wang.*
3. #208. Reliability Evaluation of Multi-State System Based on Incompletely Specified Data and Structure Function. *Elena Zaitseva, Vitaly Levashenko, Jan Rabcan, Miroslav Kvassay, Patrik Rusnak.*
4. #249. Mechanical Machinery Faults Detection and Classification Based on Artificial Intelligence Techniques. *Mostafa H. Metwally, M.A. Moustafa Hassan, Galal A. Hassaan.*
5. #214. Realistic Mathematical Model of Passive Infrared Sensor's Signal. *Oleksandr Sudakov, Andrii Malenko.*

11:10 AM – 12:50 PM

## **Session TB2: 10. Information Computing Systems for Education and Commercial Applications**

Room: B

**Chair:** Sergii Telenyk

1. #169. ICT Tools Supporting the Education Process: ELEANOR (E-Learning and Education Assisted by New On-line Resources). *Francesca Guerriero, Giusy Macrina, Gianfranco Salfi.*
2. #021. Data Piecewise Linear Approximation for Bearings Degradation Monitoring. *Fei Huang, Alexandre Sava, Kondo H. Adjallah, Zhouhang Wang.*
3. #133. Method of Assessing the State of Monuments based on Fuzzy Logic. *Sergii Telenyk, Krzysztof Czajkowski, Petro Bidiuk, Eduard Zharikov.*
4. #216. The Creation of a Free Vocal SMS and Email Sender and Reader App with Chat Style Interface. *Radu-Ştefan Ricman, Roland Szabo, Aurel Gontean.*
5. #277. Multiple Regression Method for Analyzing the Tourist Demand Considering the Influence Factors. *Viktor Krylov, Anatoliy Sachenko, Pavlo Strubyskyi, Dmytro Lendiuk, Hrystyna Lipyanina, Diana Zahorodnia, Vitaliy Dorosh, Taras Lendyuk.*

11:10 AM – 12:50 PM

## **Session TC2: 28. Special Stream in Wireless Systems**

Room: C

**Co-Chairs:** Uwe Grossmann, Axel Sikora

1. #041. Business Models for Wireless AAL Systems – Financing Strategies. *Jelena Bleja, Henrike Langer, Uwe Grossmann.*
2. #127. Latency Reduction Techniques for NB-IoT Networks. *Kofi Atta Nsiah, Zubair Amjad, Axel Sikora, Benoît Hilt, Jean-Philippe Lauffenburger.*
3. #117. Miniaturized Off-Centered Fed Dipole Slot Antenna for Multiband Wireless Applications. *Maawia, Rabiai Mohammed, Shahid Khan, Hazrat Ali, Safdar Nawaz Khan Marwat, Muhammad Asim, Camel Tanougast.*
4. #220. Performance Measurements of Narrowband-IoT Network in Emulated and Field Testbeds. *Jubin Sebastian E, Axel Sikora.*
5. #035. Multi-hop Routing Implementation in Spatially Distributed Wireless Sensor Networks for Large-Scale Environmental Monitoring Applications. *Afzal Ahmad, Muhammad Adeel Pasha, Shahid Masud, Manuel Schappacher, Assila Belhouichet, Axel Sikora.*

11:10 AM – 12:50 PM

**Session TD2: 24. Special Stream in Project Management**

Room: **D**

**Co-Chairs:** Carsten Wolff, Jose Ramon Otegi-Olaso

1. #237 Data Acquisition Framework for Competence Profiles Selection and Project Staffing. *Nargiza Mikhridinova, Carsten Wolff, Bassam Hussein.*
2. #269. Evaluating the Impact of Involving Students in Producing Learning Aids in Project Management. The Animation Project. *Bassam Hussein, Carsten Wolff, Nargiza Mikhridinova.*
3. #274. International Cooperation at the University Level. Obstacles and Challenges for Incoming Students and How to Eliminate them. *Anna Badasian.*
4. #281. Model of Management of Resources Production in 4P-Environment of Project-Oriented Enterprise. *Nataliia Yehorchenkova, Iurii Teslia, Oleksii Yehorchenkov, Liubov Kubiavka, Tatiana Latysheva, Yevheniia Kataieva, Olena Verenysh.*
5. #205. The Project Management in Italian Air Force and the Touch&Go Methodology. *Francesca Fabiano, Luigi Di Puglia Pugliese, Francesca Guerriero.*
6. #305. Assessing the Success of R&D Projects and Innovation Projects Through Project Management Life Cycle. *Mahboobeh Ramezani Farokhad, Joserra Otegi, Leonardo Sastoque Pinilla, Nerea Toledo Gandarias, Luis Norberto López de Lacalle.*

12:50 PM – 1:50 PM

**Lunch:** *Show Room*

1:50 PM – 2:30 PM

**Wieslaw Winiacki Memorial Session**

Room: **A**

**Co-Chairs:** Anatoliy Sachenko, George Markowsky, Piotr Bilski

1:50 PM – 2:30 PM

**Poster Session TP:** *Hall of lobby*

**Chair:** Volodymyr Opanasenko

1. #061. The Computer-integrated System of Assessment of Plant Condition in Closed-ground Structures. *Vitaliy Lysenko, Taras Lendiel, Dmytro Komarchuk, Alla Dudnyk, Natalia Zaets.*
2. #114. About Innovation-Investment Designing of Complex Systems by Inductive Technology of System Information-Analytical Research. *Volodymyr Osypenko, Irina Lurie, Maryna Yakobchuk, Nataliia Savina, Oleg Boskin, Volodymyr Lytvynenko.*

3. #204. Hierarchical Model of Behavior On-line Testing for Distributed Information Systems. *Oleksandr Martynyuk, Oleksandr Drozd, Ahmesh Tamim, Bui Van Thuong, Anatoliy Sachenko, Halyna Mykhailova, Mykhaylo Dombrovskyi.*
4. #209. Optimization of Complex Dynamic Objects Survey Procedure. *Orest Ivakhiv, Markiyan Nakonechnyi, Oleksandr Viter, Grygoriy Hladiy, Inna Shylinska, Taras Lendyuk.*
5. #088. Web Service Interaction Modeling with Colored Petri Nets. *Aleksandr Gozhyj, Irina Kalinina, Victor Gozhyj, Victoria Vysotska.*
6. #059. The universal neural network model for solving the Navier-Stokes equation. *Aleksei Lomakin, Nikolai Korsunov.*
7. #141. SOA Based System for Big Genomic Data Analytics and Knowledge Discovery. *Veska Gancheva, Plamenka Borovska.*
8. #152 Thermal Design of Electronic Devices with a Forced Cooling System. *Galina Shilo, Vladimir Beskorovainyi, Evgen Ogrenich, Nataliia Furmanova, Natalia Myronova.*
9. #288. Modeling the Multi-Dimensional Indicators of Regional Integration Processes. *Olena Bulatova, Vitalina Kuryliak, Yevghen Savelyev, Olga Zakharova, Svitlana Sachenko.*
- 10.#008. The Development of Distance Learning in Ukrainian Liberal Arts Institutions Based on EU Experience. *Halina Falfushynska, Aleksandra Klos-Witkowska, Bogdan Buyak, Grigory Tereshchuk, Uliana Iatsykovska, Pawel Falat, Rafal Szklarczyk.*
- 11.#191. Methodology of Transformation of Fuzzy Queries into Queries in the SQL Standard. *Grzegorz Nowakowski.*
- 12.#122. An Improved Association Rule Mining Algorithm Based on Ant Lion Optimizer Algorithm and FP-Growth. *Dawei Dong, Zhiwei Ye, Yu Cao, Shiwei Xie, Fengwen Wang, Wei Ming.*
- 13.#225. Building of the Predicate Recognition System for the NLP Ontology Learning Module. *Chang Shu, Dmytro Dosyn, Vasyl Lytvyn, Victoria Vysotska, Anatoly Sachenko, Su Jun.*
- 14.#064. Intelligent Information System for Investment in Uncertainty. *Yuriy Kondratenko, Galyna Kondratenko, Ievgen Sidenko, Mykyta Taranov.*
- 15.#243. Evaluating Array DBMS Compression Techniques for Big Environmental Datasets. *Ramon Antonio Rodrigues Zalipynis.*
- 16.#106. Research on Network Intrusion Detection Based on Support Vector Machine Optimized with Grasshopper Optimization Algorithm. *Zhiwei Ye, Yiheng Sun, Shuang Sun, Sikai Zhan, Han Yu, Quanfeng Yao.*
- 17.#024. A Spark-based Distributed Whale Optimization Algorithm for Feature Selection. *Hongwei Chen, Zhou Hu, Lin Han, Qiao Hou, Zhiwei Ye, Jiansen Yuan, Jun Zeng.*
- 18.#027. Distributed Text Feature Selection Based On Bat Algorithm Optimization. *Hongwei Chen, Qiao Hou, Lin Han, Zhou Hu, Zhiwei Ye, Jun Zeng, Jiansen Yuan.*
- 19.#028. A Feature Selection Method of Parallel Grey Wolf Optimization Algorithm Based on Spark. *Hongwei Chen, Lin Han, Zhou Hu, Qiao Hou, Zhiwei Ye, Jun Zeng, Jiansen Yuan.*



- 20.#042. Research on Short-term Electric Load Forecast Based on Grey Neural Network and Snap-drift Cuckoo Search Algorithm. *Feng Chen, Zhiwei Ye, Jun Su, Haofeng Lang, Xiaoxiao Shi, Shuqing Wang.*
- 21.#148. Learning Parameters in Deep Belief Networks Through Ant Lion Optimization Algorithm. *Zhiwei Ye, Yuanzhi Tang, Wei Liu, Mingwei Hu, Ziwei Wang, Li Zhang, Ming Wei.*
- 22.#129. Emergency Forecasting on the Basis of the Bifurcation Analysis Practice-Oriented to Local Climate Dynamics. *Yury Kolokolov, Anna Monovskaya.*
- 23.#184. To Experimental Imitations of Evolutional Scenarios in Local Climate Dynamics. *Yury Kolokolov, Anna Monovskaya, Vladimir Bagrov.*
- 24.#003. Approach to Managing Data from Diverse Sources. *Vitalii I. Yesin, Mikolaj Karpinski, Maryna V. Yesina, Vladyslav V. Vilihura, Olga Veselska, Lukasz Wieclaw.*
- 25.#006. A Method for Decimal Number Recovery from its Residues Based on the Addition of the Product Modules. *Mikolaj Karpinski, Stanislaw Rajba, Stanislaw Zawislak, Kornel Warwas, Mykhailo Kasianchuk, Stepan Ivasiev, Igor Yakymenko.*
- 26.#297. eLearning Remote Simulator for Implementing Control Systems - A Case Study on a DC Motor. *Mircea Stefan Simoiu, Vasile Calofir, Ioana Făgărășan, Cristina Nichiforov.*
- 27.#298. Dynamic Nonlinear Modelling of Building Structure Using the Force Analogy Method. *Vasile Calofir, George Bogdan Nica, Grigore Stamatescu, Nicoleta Arghira.*
- 28.#074. Awareness Management of Stakeholders During Project Implementation on the Base of the Markov Chain. *Olena Verenysh, Olena Sharovara, Mariia Dorosh, Mariia Voitsekhovska, Nataliia Yehorchenkova, Iryna Golyash.*
- 29.#073. Augmented Reality in Telemedicine Applications Focus on Remote Training. *Mouna Kenoui.*
- 30.#087. On Development of Machine Learning Models with Aim of Medical Differential Diagnostics of the Comorbid States. *Vasyl Martsenyuk, Liliya Babinets, Yuliya Dronyak, Olha Paslay, Olga Veselska, Kornel Warwas, Igor Andrushchak, Aleksandra Kłos-Witkowska.*

2:30 PM – 4:10 PM

### **Session TA3: 5. Computer Systems for Healthcare and Medicine**

Room: A

**Chair:** Francesca Guerriero

1. #094. Development of Architectural Realizations of Phototherapy Computer's Systems for Prevention and Treatment. *Alexander Trunov, Alexander Belikov.*
2. #115. Application of a Combined Approach for Predicting a Peptide-Protein Binding Affinity Using Regulatory Regression Methods with Advance Reduction of Features. *Oleksandr Murzenko, Serge Olszewski, Oleg Boskin, Irina Lurie, Nataliia Savina, Mariia Voronenko, Volodymyr Lytvynenko.*

3. #187. Impact of Metabolomics on Depression using Data Mining Techniques. *Olga Chovancova, Andrea Stafurikova, Denisa Macekova, Terezia Kiskova, Jozef Kostolny.*
4. #217. Supporting a Pharmaceutical Wholesaler in the Vehicle Fleet Organization: an Italian Case Study. *Francesca Guerriero, Rosita Guido, Giovanni Mirabelli, Vittorio Solina.*
5. #231. Imaging Photoplethysmography: Signal Waveform Analysis. *Djamaleddine Djeldji, Frédéric Bousefsaf, Choubeila Maaoui, Fethi Bereksi-Reguig.*

2:30 PM – 4:10 PM

### **Session TB3: 23. Special Stream in Machine Learning**

Room: **B**

**Co-chairs:** Yevgeniy Bodyanskiy, Eduard Petlenkov

1. #132. Capsule-Net for Urdu Digits Recognition. *Talha Iqbal, Hazrat Ali, Muhammad Muneeb Saad, Shahid Khan, Camel Tanougast.*
2. #105. NN-SANARX Model Based Control of a Water Tank System Using Embedded Microcontroller Arduino. *Vjatseslav Skiparev, Juri Belikov, Eduard Petlenkov.*
3. #238. Prediction of Surrounding Vehicles Lane Change Intention Using Machine Learning. *Abdelmoudjib Benterki, Moussa Boukhnifer, Vincent Judalet, Maaoui Choubeila.*
4. #084. 2D-Deep Neural Network and its Online Rapid Learning. *Yevgeniy Bodyanskiy, Olena Boiko, Iryna Pliss, Valentyna Volkova.*
5. #263. Machine Learning Based Medicine Distribution System. *Huiling Xia, Chunzhi Wang, Lingyu Yan, Xinhua Dong, Yichao Wang.*

2:30 PM – 4:10 PM

### **Session TC3: 28. Special Stream in Wireless Systems**

Room: **C**

**Co-Chairs:** Uwe Grossmann, Axel Sikora

1. #312. A Method for Optimum Placement of Access Points in Indoor Positioning Systems. *Roman Voronov, Alex Moschevikin, Axel Sikora.*
2. #282. 3D Virtual Biomimetic Network: a Topology for Resilient Intelligent Wireless Sensor Networks. *Yousif E.E. Ahmed, Kondo H. Adjallah, Magdi B.M. Amin.*
3. #313. Formal Description of Use Cases for Industry 4.0 Maintenance Processes Using Blockchain Technology. *Jan Stodt, Eugen Jastremskoj, Christoph Reich, Dominik Welte, Axel Sikora.*
4. #314. 6LoWPAN Protocol in Fixed Environments: A Performance Assessment Analysis. *Nin Hayati Mohd Yusoff, Nurul Azma Zakaria, Axel Sikora, Jubin Sebastian E.*

5. #303. Scalable QAM Modulation for Physical Layer Security of Wireless Networks. *Taras Rosa, Mykola Kaidan, Juraj Gazda, Pavlo Bykovyy, Grygoriy Sapozhnyk, Taras Maksymyuk.*<sup>1</sup>

4:10 PM – 5:00 PM

**Transfer to city tour in downtown**

5:00 PM – 7:00 PM

**City Tour**

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<sup>1</sup> Presentation online

**Friday, September 20, 2019**

8:00 AM – 4:00 PM

**Registration:** *Hall of lobby*

8:00 AM – 8:30 AM

**Welcome coffee:** *Hall of lobby*

8:30 AM – 10:10 AM

**Session FA1: 1. Advanced Instrumentation and Data Acquisition Systems**

Room: A

**Chair:** Zbigniew Kokosinski

1. #173. Theoretical Error of Bearing Method in Artillery Sound Ranging. *Roman Kochan, Orest Kochan, Bogdan Trembach, Uliana Kohut, Stanislaw Zawislak, Pawel Falat, Kornel Warwas.*
2. #246. Timing Characteristics of Sensor Simulation in an HIL Environment. *Igor Khimchenko, Peter Schulz.*
3. #043. Solar Cell Data Acquisition System. *Valeriy Martynyuk, Mykola Fedula, Roman Petrus, Denis Makaryshkin, Liudmyla Kovtun.*
4. #137. Collaborative UAV-WSN System for Data Acquisition and Processing in Agriculture. *Dan Popescu, Florin Stoican, Loretta Ichim, Grigore Stamatescu, Cristian Dragana.*
5. #172. Automated Time Delay Estimation for Distributed Sensor Systems of Electric Vehicles. *Jakob Pfeiffer, Xuyi Wu.*

8:30 AM – 10:10 AM

**Session FB1: 7. Data Analysis and Modeling**

Room: B

**Chair:** Oleksandr Sudakov

1. #124. Pixel-wise Road Pavement Defects Detection Using U-Net Deep Neural Network. *Rytis Augustaukas, Arūnas Lipnickas.*
2. #177. Data-Analysis Methods in Detecting, Visualizing and Predicting Nuclear Power Plant Component Ageing Phenomena. *Miki Siroła, John Einar Hulsund.*
3. #112. Development, Validation and Testing of the Bayesian Network of Educational Institutions Financing. *Volodymyr Lytvynenko, Nataliia Savina, Mariia Voronenko, Nadia Doroschuk, Saule Smailova, Oleg Boskin, Tatyana Kravchenko.*

4. #262. Formal Aspects of Case-Based Data Modelling for Intelligent Drilling Control. *Vasyl Sheketa, Mykola Chesanovskyy, Mykola Pasyeka, Volodymyr Pikh, Yulia Romanyshyn, Viktoriia Bandura.*
5. #219. Availability as a Metric for Region-Scale Telecommunication Designs. *Yuri M. Monakhov, Mikhail Yu. Monakhov, Sergei D. Luchinkin, Anna P. Kuznetsova, Maria M. Monakhova.*

8:30 AM – 10:10 AM

### **Session FC1: 15. Pattern Recognition, Digital Image and Signal Processing**

Room: C

**Co-Chairs:** Choubeila Maaoui, Agata Manolova

1. #048. Deep Convolutional Network with Long Short-Term Memory Layers for Dynamic Gesture Recognition. *Rostyslav Siriak, Inna Skarga-Bandurova, Yehor Boltov.*
2. #082. Comparison of Pixel Correlation Induced by Space-Filling Curves on 2D Image Data. *Stéphane Duguay, Steven Pigeon.*
3. #223. Along-Track and Cross-Track Noise Analysis of Altimeter Data Using Tensors. *Nicole Christoff, Agata Manolova, Roumen Mironov.*
4. #081. Twosome Modelling based Emotion Recognition in Videos. *Salma Kasraoui, Zied Lachiri, Kurosh Madani.*
5. #134. A River Flood Monitoring Technique based on Image Splitting Algorithms. *Roberta Avanzato, Francesco Beritelli, Angelo Cavallaro, Massimiliano Cuccia, Tiziana Lombardo.*

8:30 AM – 10:10 AM

### **Session FD1: 19. Special Stream in Cyber Security**

Room: D

**Chair:** Oleksandr Letychevskyi

1. #014. Enhancing the Performance of an Image Steganalysis Approach Using Variable Batch Size-Based CNN on GPUs. *Eslam M. Mustafa, Mohamed M. Fouad, Mohamed A. Elshafey.*
2. #044. An Approach to Intelligent Distributed Scanning and Analytical Processing of the Internet Inappropriate Information. *Alexander Branitskiy, Andrey Fedorchenko, Igor Kotenko, Igor Saenko.*
3. #068. The Basic Model of Attack Resistance Estimation for Monitoring the Program Code Integrity of the FPGA-Based Systems. *Kostiantyn Zashcholkin, Oleksandr Drozd, Oleg Sachenko, Olena Ivanova, Yurii Boliubash.*
4. #244. A Design for a Cryptographically Secure Pseudo Random Number Generator. *Benjamin Williams, Robert E. Hiromoto, Albert Carlson.*
5. #304. Method of Fraudster Fingerprint Formation During Mobile Application Installations. *Tetiana Polhul, Andrii Yarovy.*

10:10 AM – 10:30 AM

**Coffee Break:** *Hall of lobby*

10:30 AM – 12:10 PM

**Session FA2: 2. Advanced Mathematical Methods for Data Acquisition and Computing Systems**

Room: A

**Chair:** Vladimir Oleshchuk

1. #218. Application of Generalised Reed-Muller Expansion in Development of Programmable Logic Array. *Elena Zaitseva, Vitaly Levashenko, Igor Lukyanchuk, Miroslav Kvassay, Jan Rabcan, Patrik Rusnak.*
2. #250. Fuzzy Logic Control for a Stand-Alone PV System with PI Controller for Battery Charging Based on Evolutionary Technique. *Omnia S. S. Hussian, Hany M. Elsayed, M. A. Moustafa Hassan.*
3. #174. Towards Image Processing Based on System of Difference Equations. *Andrii Cheredarchuk, Oleksii Kashpirovskyi, Galyna Kriukova, Maksym Sarana.*
4. #294. Comparison between Maximum Power Point Tracking Techniques for Grid-Connected PV System. *Dima El-Hassan, M. A. Moustafa Hassan, Mostafa A. Elshahed.*
5. #300. Development of Large Numbers Factorization Algorithm. *Oleg Illiashenko, Vladimir Pevnev.*

10:30 AM – 12:10 PM

**Session FB2: 10. Information Computing Systems for Education and Commercial Applications**

Room: B

**Chair:** Alexandre Sava

1. #292. Visualization and Interaction Techniques in Virtual Reality for Guided Tours. *Julien Letellier, Jürgen Sieck.*
2. #189. Online Incipient Chatter Detection Based on Once-Per-Revolution Sampling and Dynamic Threshold Variant. *Yanqing Zhao, Kondo H. Adjallah, Alexandre Sava, Zhouhang Wang.*
3. #207. Prosody Training Mobile Application: Early Design Assessment and Lessons Learned. *Evgeny Pyshkin, John Blake, Anton Lamtev, Iurii Lezhenin, Artyom Zhuikov, Natalia Bogach.*
4. #287. Improving Students' Qualification Level by Introducing Innovative Educational and Production Technologies. *Galina Shilo, Nataliia Furmanova, Denys Romaniuk, Anton Kalynychnenko, Pavlo Kostianoi, Oksana Desyatnyuk.*

5. #135. Conceptual Foundations of the Use of Formal Models and Methods for the Rapid Creation of Web Applications. *Sergii Telenyk, Grzegorz Nowakowski, Eduard Zharikov, Jewhenii Vovk.*

10:30 AM – 12:10 PM

## **Session FC2: 26. Special Stream in Smart Buildings and Smart Cities**

Room: C

**Co-Chairs:** Dan Popescu, Grigore Stamatescu

1. #060. A Machine-Learning Based Approach for DataDriven Identification of Heating Dynamics of Buildings' Living-Spaces. *Roozbeh Sadeghian Broujeny, Kurosh Madani, Abdennasser Chebira, Veronique Amarger, Laurent Hurtar.*
2. #067. Assessment of Occupancy Estimators for Smart Buildings. *Claudia Chitu, Grigore Stamatescu, Iulia Stamatescu, Valentin Sgârciu.*
3. #158. Embedded On-line System for Electrical Energy Measurement and Forecasting in Buildings. *Cristina Nichiforov, Grigore Stamatescu, Iulia Stamatescu, Nicoleta Arghira, Ioana Făgărășan, Sergiu Stelian Iliescu.*
4. #271. Predictive Causality of Granger Test for Long Run Equilibrium to Photovoltaic System. *Yannick Fanchette, Harry Ramenah, Philippe Casin, Michel Benne, Camel Tanougast, Kondo Adjallah.*
5. #079. A Convolutional Neural Networks approach to Audio Classification for Rainfall Estimation. *Roberta Avanzato, Francesco Beritelli, Francesco Di Franco, Valerio Puglisi.*

10:30 AM – 12:10 PM

## **Session FD2: 22. Intelligent Robotics and Sensors**

Room: D

**Chair:** Yuriy Kondratenko

1. #120. EUROPA – A ROS-based Open Platform for Educational Robotics. *Georgios Karalekas, Stavros Vologianidis, John Kalomiros.*
2. #031. Control and Identification in Cognitive Maps with Suppressing Constrained External and Internal Disturbances in Impulse Processes. *Vyacheslav Gubarev, Viktor Romanenko, Yurii Miliavskiy.*
3. #065. Neural Controller for Mobile Multipurpose Caterpillar Robot. *Oleksandr Gerasin, Oleksiy Kozlov, Galyna Kondratenko, Joachim Rudolph, Yuriy Kondratenko.*
4. #119. Motion Detection of a Motorcycle Approaching from Behind Using Head and Torso Simulator. *Ryuichi Shimoyama, Shunta Ishitsuka.*
5. #029. Recurrent Random Delay Estimation in Networked Discrete Control Systems. *Leonid Lyubchik, Galina Grinberg, Olha Dunaievskaya, Nataliia Protsai.*
6. #230. Stability Analysis of Heartbeat Control Based on the Zeeman Framework. *Mohamed Abdelhady, Yuriy Kondratenko, Wael Abouelwafa, Dan Simon.*

12:10 PM – 1:00 PM

**Room:** *Room A (Auditorium)*

**Plenary Session F1**

**Kurosh Madani “Machine-Awareness Through a Machine-Learning Based Humanization of Robots’ Gazing”**

Chair: Robert E. Hiromoto

1:00 PM – 2:00 PM

**Lunch:** *Show Room*

2:00 PM – 2:40 PM

**Domenico Grimaldi Memorial Session**

Room: A

**Co-Chairs:** Anatoliy Sachenko, George Markowsky, Francesca Guerriero

2:00 PM – 2:40 PM

**Poster Session FP:** *Hall of lobby*

**Chair:** Evgeny Pyshkin

1. #071. Evaluation Cognitive Maps for extended technology roadmapping in IoT. *Anna Usik, Volodymyr Kazymyr.*
2. #095. Application of Wireless Sensor Networks for Digital Agriculture. *Volodymyr Romanov, Igor Galelyuka, Hanna Antonova, Oleksandra Kovyrova, Volodymyr Hrusha, Oleksander Voronenko.*
3. #145. An Image Segmentation Method Based on Improved Krill Herd Algorithm and Fuzzy C-Means Clustering Algorithm. *Ziwei Wang, Zhiwei Ye, Wei Liu, Mingwei Hu, Yuanzhi Tang, Li Zhang, Ming Wei.*
4. #265. An Image Enhancement Optimization Method Based on Differential Evolution Algorithm and Cuckoo Search Through Serial Coupled Mode. *Zhiwei Ye, Ye Cao, Aixin Zhang, Can Jin, Lie Ma, Xiang Hu, Jiwei Hu.*
5. #266. An Image Thresholding Method Based on Differential Evolution Algorithm and Genetic Algorithm. *Zhiwei Ye, Aixin Zhang, Ye Cao, Lie Ma, Can Jin, Xiang Hu, Jiwei Hu.*
6. #270. Emotional Text Analysis Based on Ensemble Learning of Three Different Classification Algorithms. *WenShuo Bian, ChunZhi Wang, ZhiWei Ye, Lingyu Yan.*
7. #197. Information Hiding Using 3D-Printing Technology. *Alexandr Kuznetsov, Oleh Stefanovych, Yuriy Gorbenko, Oleksii Smirnov, Victor Krasnobaev, Kateryna Kuznetsova.*



8. #111. Botnet Detection Approach for the Distributed Systems. *Oleg Savenko, Anatoliy Sachenko, Sergii Lysenko, George Markowsky.*
9. #276. Virtual Reality Implementation for Design of Warehouse Lighting. *Olexandr Kapliienko, Sergii Tabunshchuk, Galyna Tabunshchuk, Tetiana Kapliienko, Serhii Sylenko.*
- 10.#301. Method of Development the Behavior Pattern. *Nataliya Shakhovska, Ruslan Shalaev, Alex Zaslavsky, Artur Kadyrov, Vitaliy Shevchuk, Sofiia Heletiy.*
- 11.#247. Fuzzy Method with Z-numbers for Choosing Target Group of Users for UX Applications. *Arkadiusz Banasik, Marcin Lawnik.*
- 12.#153. Image Classification Based on BP Neural Network and Sine Cosine Algorithm. *Haoqiu Song, ZhiweiYe, ChunzhiWang, LingyuYan.*
- 13.#034. A Wireless Sensor Network Location Algorithm Based on Whale Algorithm. *Fenghao Lang, Jun Su, ZhiWei Ye, XiaoXiao Shi, Feng Chen.*
- 14.#108. Image Segmentation Using Fuzzy C-means Optimized by Ant Lion Optimization. *Can Jin, Zhiwei Ye, Lingyu Yan, Ye Cao, Aixin Zhang, Lie Ma, Xiang Hu, Jiwei Hu.*
- 15.#099. A Wireless Sensor Network Node Location Method Based on Salp Swarm Algorithm. *Xiaoxiao Shi, Jun Su, Zhiwei Ye, Feng Chen, Pengzi Zhang, Fenghao Lang.*
- 16.#160. ANTRL as a Development Platform for the Series DSL for the Learning Process. *Ihor Kandyba, Yevhen Davydenko, Valentyna Panasyuk, Alyona Shved, Mykola Fisun.*
- 17.#053. Computer Tools for Cargo Thefts Fighting on Railway Transport. *Ivan Kit, Andrii Fomenko, Volodymyr Vyshnia, Iryna Novosad.*
- 18.#032. Data Processing in IoT for Smart City Systems. *Oleksij Duda, Volodymyr Kochan, Natalija Kunanets, Oleksandr Matsiuk, Volodymyr Pasichnyk, Anatoliy Sachenko, Taras Pytlenko.*
- 19.#311. How will we Build Competences for Managing the Digital Transformation? *Carsten Wolff, Azimbek Omar, Yerlan Shildibekov.*
- 20.#051. Specialized Computer Systems Digital Bandpass Frequency-Dependent Components Rearrangement. *Anna Ukhina, Valerii Sytnikov, Oleg Streltsov, Pavel Stupen, Dmitry Yakovlev.*
- 21.#004 Comparative Analysis of Key Encapsulation Mechanisms. *Maryna Yesina, Mikolaj Karpinski, Volodymyr Ponomar, Yuriy Gorbenko, Tomasz Gancarczyk, Uliana Iatsykovska.*
- 22.#083. Vector of Diagnostic Features in the Form of Decomposition Coefficients of Statistical Estimates Using a Cyclic Random Process Model of Cardiosignal. *Vasyl Martsenyuk, Andriy Sverstiuk, Aleksandra Klos-Witkowska, Andriy Horkunenko, Stanisław Rajba.*
- 23.#086 Dynamic Changes of the Colour Intensity of Collected Urine as a Basis for a Distant Uroflowmetry. *Leonid Godlevsky, Konstantin Shakun, Vasyl Martsenyuk, Tatyana Tatarchuk, Tatyana Stoeva, Tamara Godlevska, Ilya Shakun, Aleksandra Klos-Witkowska.*
- 24.#309. Image Recognition Methods Based on Hemming Distance. *Andriy Sydor, Diana Zahorodnia, Pavlo Bykovyy, Ivan Kit, Vasyl Koval, Konrad Grzeszczyk.*

- 25.#023. The Application of the Internal Restructuring Method of the Information Resource Data According to the Sign of the Number of Series of Units to Improve the Statistical Coding Efficiency. *Vladimir Barannik, Ivan Tupitsya, Valeriy Barannik, Sergii Shulgin, Alexander Musienko, Roman Kochan, Olga Veselska.*
- 26.#138. MLP on FPGA: Optimal Coding of Data and Activation Function. *Farid Alilat, Reda Yahiaoui.*

2:40 PM – 4:20 PM

### **Session FA3: 5. Special Stream in Human-Machine Interaction**

Room: A

**Co-Chairs:** Peter Arras, Galyna Tabunshchyk

1. #284. Augmented Reality for the Abstract Paintings: Application Scenarios, Semantic Similarity Analysis and Case Study. *Olena Golembovska, Vyacheslav Kharchenko, Igor Shostak, Mariia Danova, Olena Feoktystova, Vladyslav Plietnov.*
2. #057. Method of Audio Interaction with Indoor Navigation Systems. *Olha Petrova, Galyna Tabunshchyk.*
3. #093. Modeling and Simulation of the Services for Vehicle Charging Infrastructure Interaction. *Peter Arras, Galyna Tabunshchyk, Vyacheslav Okhmak, Sergiy Korotunov.*
4. #098. Human-Machine Interaction in the Remote Control System of Electric Charging Stations Network. *Anzhelika Parkhomenko, Hanna Selevych, Stanislav Kijan.*
5. #272. Method for Detecting Error in Design of Virtual Environment. *Svitlana Antoshchuk, Olena Arsirii, Oleksandr Blazhko, Yuliia Troianovska, Tetiana Luhova.*

2:40 PM – 4:20 PM

### **Session FB3: 14. Internet of Things**

Room: B

**Chair:** Robert E. Hiromoto

1. #186. Sensor Virtualization for Enabling Novel Services. *Oana Chenaru, Cristina Elena Hanganu, Dan Popescu, Loretta Ichim.*
2. #155. Parking Guide Service for Large Urban Areas. *Marina Derkach, Vladislav Lysak, Inna Skarga-Bandurova, Igor Kotsiuba.*
3. #078. Multi-level Method of Behavioral Online Testing of Distributed Information Systems. *Oleksandr Martynyuk, Oleksandr Drozd, Hanna Stepova, Dmitry Martynyuk.*
4. #222. Comparison of Deep Autoencoder Architectures for Real-time Acoustic Based Anomaly Detection in Assets. *Maarten Meire, Peter Karsmakers.*
5. #302. Integrating SDN-Enabled Wireless Sensor Networks into the Internet. *Celal Çeken, Mohammed Al-Hubaishi.*

2:40 PM – 4:20 PM

### **Session FC3: 29. Workshop on Cyber Physical Systems and Internet of Things**

Room: C

**Chair:** Vyacheslav Kharchenko

1. #193. Detection and Analysis of Periodic Actions for Context-Aware Human Centric Cyber Physical System to Enable Adaptive Occupational Therapy. *Nikolay Neshov, Agata Manolova, Krasimir Tonchev, Ognian Boumbarov.*
2. #224. Semantic Interoperability in Cyber-Physical Systems. *Ingo Kunold, Hendrik Wöhrle, Markus Kuller, Nursi Karaoglan, Fabian Kohlmorgen, Jörg Bauer.*
3. #289. Reliability Models for a Multi-fleet of Drones with Two-level Hot Standby. *Herman Fesenko, Vyacheslav Kharchenko.*
4. #291. AvTA Based Assessment of Dependability Considering Recovery After Failures and Attacks on Vulnerabilities. *Vyacheslav Kharchenko, Yuriy Ponochovniy, Al-Sudani Mustafa Qahtan Abdulmunem, Iryna Shulga.*
5. #293. ENISA Documents in Cybersecurity Assurance for Industry 4.0: IIoT Threats and Attacs Scenarios. *Vladimir Sklyar, Vyacheslav Kharchenko.*

2:40 PM – 4:20 PM

### **Session FD3: 9. High Performance Computing**

Room: C

**Chair:** Vadym Mukhin

1. #033. Study of the Functioning of the Distributed Computer System with a Resource Control Mechanism Based on a Network-Centric Approach. *Vadym Mukhin, Viktor Vyshnivskyi, Yaroslav Kornaga, Oksana Herasymenko, Yuriy Bazaka, Maxim Bazaliy.*
2. #194. Spatial-Temporal Transformation of Matrix and Multilayer Algorithms of Binary Number Multiplication. *Volodymyr Gryga, Igor Kogut, Victor Holota, Roman Kochan, Stanislaw Rajba, Tomasz Gancarczyk, Uliana Iatsykovska.*
3. #226. Preservation System for Scientific Experiments in High Performance Computing: Challenges and Proposed Concept. *Kyryll Udod, Volodymyr Kushnarenko, Stefan Wesner, Volodymyr Svjatnyj.*
4. #116. Algorithms for Calculating the Square Root and Inverse Square Root Based on the Second-Order Householder's Method. *Leonid Moroz, Volodymyr Samotyy, Oleh Horyachyy, Ulyana Dzelendzyak.*
5. #045. The FPGA-Based Problem-Oriented On-Board Processor. *Volodymyr Opanasenko, Alexander Palahin, Stanislav Zavyalov.*

7:00 PM – 10:00 PM

*Orangerie, Arsenal building in Metz downtown*

**Conference Dinner**

**Saturday, September 21, 2019**

8:00 AM – 1:00 PM

**Registration:** *Hall of lobby*

8:00 AM – 8:30 AM

**Welcome coffee:** *Hall of lobby*

8:30 AM – 9:20 AM

**Room:** *Room A (Auditorium)*

**Plenary Session S1**

**Fabio Scotti “Artificial Intelligence for Biometric Systems: Applications, Innovative Systems, and Trends”**

Chair: Kondo H. Adjallah

9:20 AM – 11:00 AM

**Session SA1: 19. Special Stream in Cyber Security**

Room: **B**

**Chair:** Vitaly Klyuev

1. #159. Incident Detection over Unified Threat Management Platform on a Cloud Network. *Muhammad Muneeb Saad, Talha Iqbal, Hazrat Ali, Mohammad Farhad Bulbul, Shahid Khan, Camel Tanougast.*
2. #229. Secure and Privacy Preserving Pattern Matching in Distributed Cloud-based Data Storage. *Vladimir Oleshchuk.*
3. #190. A User Study of the Visualization-Assisted Evaluation and Management of Network Security Detection Events and Policies. *Volker Ahlers, Bastian Hellmann, Gabi Dreo Rodosek.*
4. #239. Detection and Classification of Malicious Access using a Dionaea Honeypot. *Koki Saikawa, Vitaly Klyuev.*
5. #062. Classification Methods of Machine Learning to Detect DDoS Attacks. *Tamara Radivilova, Lyudmyla Kirichenko, Dmytro Ageiev, Vitalii Bulakh.*

9:20 AM – 11:00 AM

**Session SB1: 25. Special Stream in Quantum Computing and Post-Quantum Cryptography**

Room: **B**

**Chair:** Yevhen Vasiliu

1. #110. Abstract Model of Eavesdropper and Overview on Attacks in Quantum Cryptography Systems. *Zhengbing Hu, Yevhen Vasiliu, Oleksii Smirnov, Viktoriia Sydorenko, Yuliia Polishchuk.*
2. #201. Code-Based Schemes for Post-Quantum Digital Signatures. *Alexandr Kuznetsov, Anastasiia Kiian, Andriy Pushkar'ov, Danylo Mialkovskyi, Oleksii Smirnov, Tetiana Kuznetsova.*
3. #090. New Quantum Secret Sharing Protocol Using Entangled Qutrits. *Yevhen Vasiliu, Igor Limar, Tomasz Gancarczyk, Mikolaj Karpinski.*
4. #202. Side Channel Attack on a Quantum Random Number Generator. *Alexandr Kuznetsov, Oleksii Nariezhnii, Igor Stelnyk, Tetiana Kokhanovska, Oleksii Smirnov, Tetiana Kuznetsova.*
5. #156. Improved Model of Quantum Deterministic Protocol Implementation in Channel with Noise. *Alaa Edein Qoussini, Yousef Ibrahim Daradkeh, Shaima Mohammad Al Tabib, Sergiy Gnatyuk, Tetyana Okhrimenko, Vasyl Kinzeryavyy.*

11:00 AM – 11:30 AM

*Hall of lobby*

### **Coffee Break & Poster session SP**

**Chair:** Roman Kochan

1. #097 Mathematical Model of the Compact Inertial Navigation System of the Robot. *Alexey Lagunov, Alexey Orlov.*
2. #140. Feedforward Neural Network Based on Improved Gray Wolf Optimizer. *Wei Liu, Mingwei Hu, Zhiwei Ye, Yuanzhi Tang, Ziwei Wang, Li Zhang, Ming Wei.*
3. #151. Neural Network Structure Learning based on Binary Coded Ant Lion Algorithm. *Zhiwei Ye, Sikai Zhan, Shuang Sun, Yiheng Sun, Han Yu, Quanfeng Yao.*
4. #178. Artificial Intelligence for Sport Activity Recognition. *Sergei Bezobrazov, Sergey Anfilets, Vladimir Golovko, Anatolii Sachenko, Myroslav Komar, Vitaliy Dorosh, Volodymyr Turchenko.*
5. #203. Fuzzy-multiple Approach in Choosing Time Factor for Implementation of the Innovative Project. *Oksana Cheresnyuk, Valentyna Panasyuk, Svitlana Sachenko, Oksana Adamyk.*
6. #275. Methods of Proactive Management of Complex Projects Based on Neural Networks. *Viktor Morozov, Olena Kalnichenko, Maxim Proskurin.*
7. #279. Virtual Model for Remote Laboratory Smart House & IoT. *Anzhelika Parkhomenko, Oleh Bilov, Artem Tulenkov, Aleksandr Sokolyanskii, Yaroslav Zalyubovskiy, Karsten Henke, Heinz-Dietrich Wuttke.*
8. #258. Method of Activity of Intelligent Agent for Semantic Analysis of Software Requirements. *Olga Pavlova, Tetiana Hovorushchenko, Artem Boyarchuk.*
9. #280. Remote Monitoring of the Hospital Cardiac Patients Heart Rate. *Anzhelika Parkhomenko, Yevhenii Presaizen, Olga Gladkova, Artem Tulenkov, Marina Kalinina.*

- 10.#295. Peculiarities of Human Machine Interaction for Synthesis of the Intelligent Dialogue Chatbot. *Ievgen Sidenko, Galyna Kondratenko, Pavlo Kushneryk, Yuriy Kondratenko.*
- 11.#257. The Simple Virtual Impedance Spectroscopy Based on USB DAQ Card. *Mykhaylo Dorozhovets, Malgorzata Augustyn.*
- 12.#109. An Improved Lightning Attachment Procedure Optimization Algorithm for Function Optimization. *Shuang Sun, Zhiwei Ye, Yiheng Sun, Sikai Zhan, Han Yu, Quanfeng Yao.*
- 13.#102. Abnormal Event Detection in Video Based on SVDD. *Xinlu Zong, Lu Zhang, Jiayuan Du, Liu Wei, Qian Huang.*
- 14.#267. Financial Early Warning of Listed Companies Based on Fireworks Algorithm Optimized Back- Propagation Neural network. *Chunzhi Wang, Yichao Wang, Lingyu Yan, Zhiwei Ye, Wencheng Cai, Pan Wu.*
- 15.#306. Compression and Transfer of Images in Wireless Sensor Networks Networks Using the Transformation of Residue Number System. *Vasyl Yatskiv, Anatoliy Sachenko, Nataliya Yatskiv, Pavlo Bykovyy, Andriy Segin.*
- 16.#285. ADC for Energy Measurement Systems of Microcontroller. *Oleksandr Osolinskyi, Volodymyr Kochan, Anatoliy Sachenko, Orest Kochan, Zbyshek Dombrovskyi.*
- 17.#278. The Method of Fuzzy Assessment of the Impact of the Information System Providing Part on the Quality of its Functioning. *Nadiia Vasylykiv, Lesia Dubchak, Iryna Turchenko, Iryna Ivashchuk, Ruslan Savchyshyn.*
- 18.#166. A Fast and Accurate Edge Detection Algorithm for Real-Time Deep-Space Autonomous Optical Navigation. *Hao Xiao, Yanming Fan, Zhang Zhang, Xin Cheng.*
- 19.#130. Breast Cancer Detection and Classification based on Multilevel Wavelet Transformation. *Nazir Jan, Shahid Khan, Hazrat Ali, Djeldjli Djamaledine, Camel Tanougast.*
- 20.#157. Sensing in IoT for Smart City Systems. *Volodymyr Kochan, Natalia Kunanets, Volodymyr Pasichnyk, Oleksiy Roshchupkin, Anatoliy Sachenko, Iryna Turchenko, Oleksij Duda, Vita Semaniuk, Svitlana Romaniv, Oleksandr Matsiuk.*

11:30 AM – 1:10 PM

## **Session SA2: 8. Embedded Systems**

Room: A

**Co-Chairs:** Camel Tanougast, Alexander Drozd

1. #072. Sharing of Functional and Special Means in Pipeline Floating-Point Systems with Strongly Connected Versions. *Oleksandr Drozd, Igor Kovalev, Myroslav Drozd, Oleksandr Martynyuk, Serhii Polozhaenko.*
2. #070. A method of the results preparation in addition-based circuits. *Oleksandr Drozd, Konrad Grzeszczyk, Nadiia Vasylykiv, Julia Drozd, Iryna Turchenko, Andriy Karachka.*

3. #107. PGA Implementation of Internet Key Exchange Based on Chaotic Cryptosystem. *Belqassim Bouteghrine, Mohammed Rabiai, Camel Tanougast, Said Sadoudi.*
4. #192. Digital Data Conversion Using Content Addressable Memory. *Zbigniew Kokosiński.*
5. #123. RealTime Wireless Monitoring System of CO2 and CH4 in Juliaca-Perú. *Javier Mendoza Montoya, José Chilo.*

11:30 AM – 1:10 PM

## **Session SB2: 7. Data Analysis and Modeling**

Room: A

**Chair:** Miroslav Kvassay

1. #075. Lattice Data Analytics: The Poset of Irreducibles and the MacNeille Completion. *George Markowsky, Linda Markowsky.*
2. #113. Development of the Dynamic Bayesian Network to Evaluate the National Law Enforcement Agencies' Work. *Volodymyr Lytvynenko, Nataliia Savina, Mariia Voronenko, Anna Pashnina, Roman Baranenko, Nataliia Krugla, Ivan Lopushynskyi.*
3. #213. Spacecraft Telemetry Time Series Forecasting with Ensembles of Neural Networks. *Alexandr Doudkin, Yauheni Marushko, Jan Owsinski, Tadeusz Pawlowski.*
4. #126. Improved Spatio-temporal Kriging and its Application to Regional Precipitation Prediction. *Yan Liu, Yanzhong Hu, Haibo Wang, Can Jin, Dawei Dong.*
5. #241. Improving Sentiment Analysis in Twitter Using Sentiment Specific Word Embeddings. *Rania Othman, Youcef Abdelsadek, Kamel Chelghoum, Imed Kacem, Rim Faiz.*

1:10 PM – 2:10 PM

**Lunch:** *Show Room*

2:10 PM – 3:10 PM

**Round Table and Closing Ceremony: Room A**

**Co-Chairs:** George Markowsky, Anatoliy Sachenko, Kondo H. Adjallah



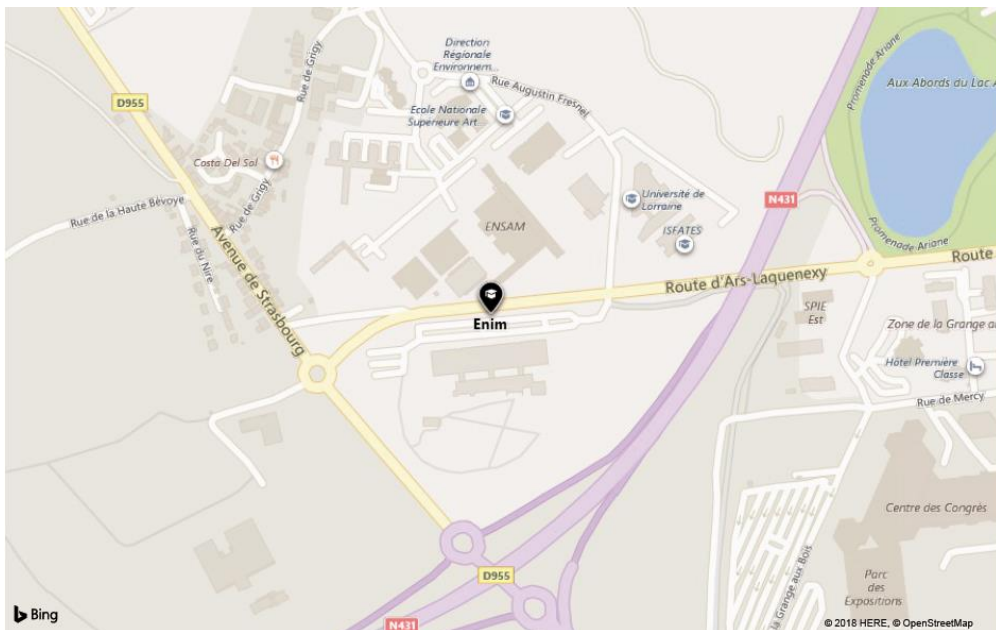
## *The Conference Venue*

The IDAACS 2019 conference will be held at [ENIM](#)

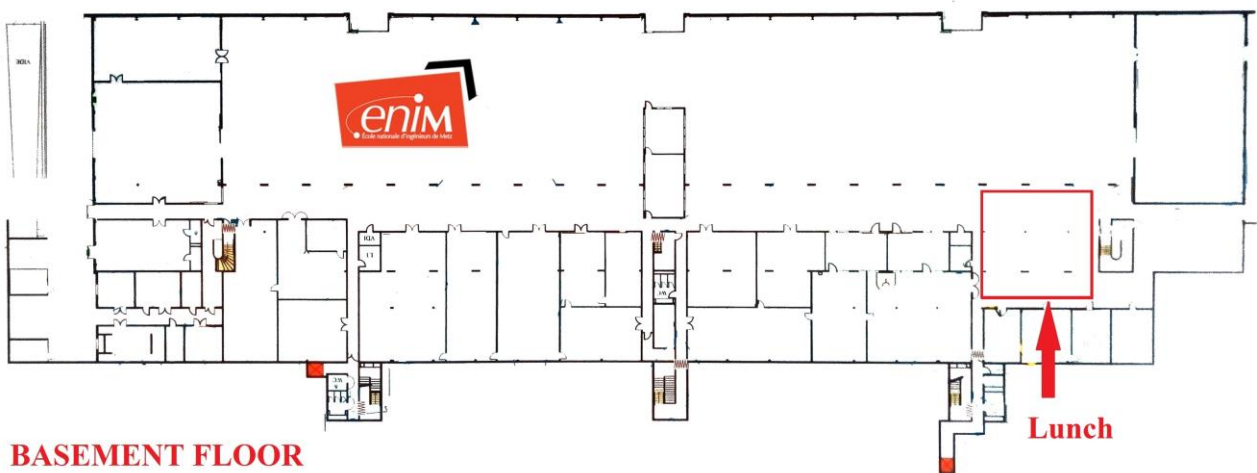
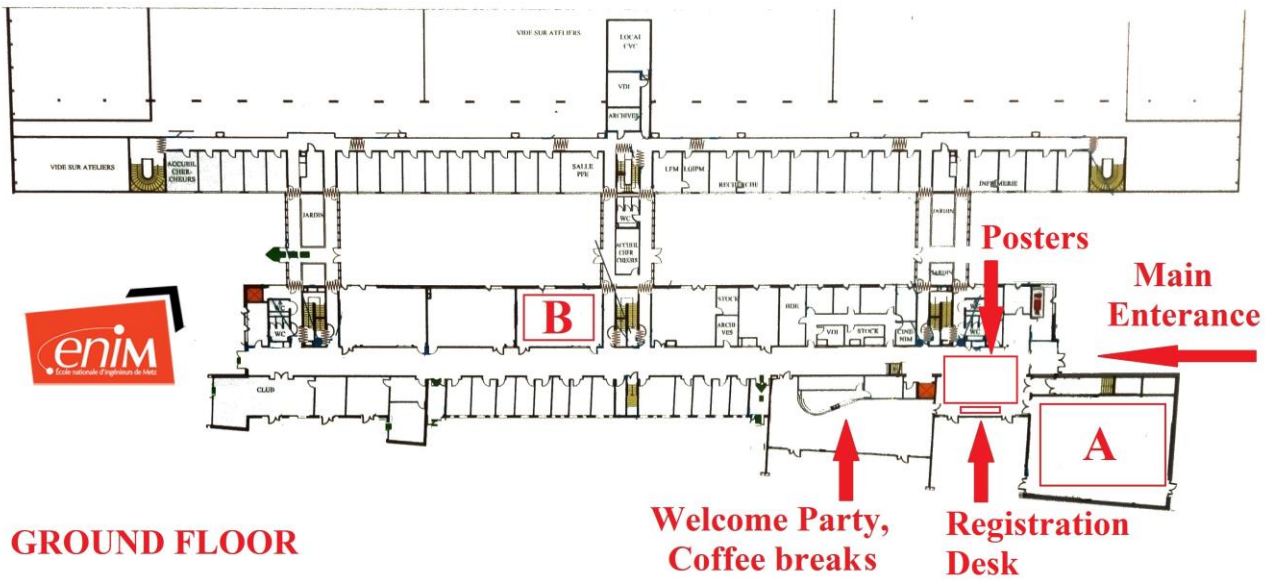
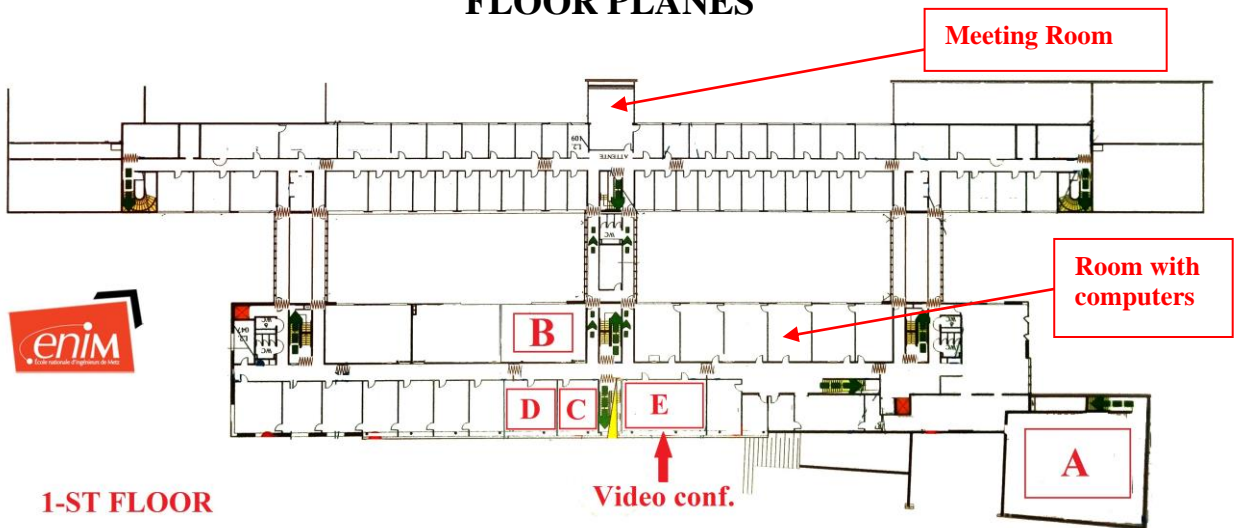


ENIM is located in Metz Technopole area: **1 Route d'Ars Laquenexy, 57078 Metz**. It can be easily reached from the Downtown Railway Station (Gare de Metz Ville) by the bus **Mettis B**, direction to *Hopital de Mercy*, and drop at bus-stop *Grandes Écoles*.

Most of the time there is a bus every 10 minutes and the journey takes about 20 minutes from downtown. For the timetable, see the website [LeMet](http://lemet.fr/) (<http://lemet.fr/>).



# FLOOR PLANES



## How to get Metz from airports

### Train tickets early booking through internet enables getting cheaper prices

For booking train tickets, see [SNCF](#) website. The trip takes 1h20 from Paris by high speed train (TGV), 40-50 minutes from Luxembourg and 4h30 from Frankfurt.

### Paris Charles de Gaulle (CDG) Airport Terminal 2 → Metz (2 alternatives)

1. **a)** Take the high-speed train (TGV) from CDG airport → *Lorraine TGV* station (1h10), located at 25 km of Metz (50 – 90 Euros, cheaper with early Internet reservation); **b)** then, take the shuttle (navette) from Lorraine TGV Station → Metz railway station (30 minutes trip, 6.10 Euros). The shuttle fees might be included in the train ticket (so show your train ticket to the bus driver), or be paid onboard the shuttle about 7€ for one trip.
2. If you prefer to arrive directly to Metz Ville (Downtown) railway station, you may book a round-trip ticket on a TGV from *Gare de l'Est* in Paris. Express Metro *RER B* from the CDG Airport enables to reach *Paris Gare de Nord* in about 30-40 minutes, and then 1) you may walk to *Gare de l'Est* in 5 minutes, or 2) you may take the Metro line 4 and drop at only one stop.

### Luxembourg Airport ([luxair.lu](#)) → Metz (3 alternatives)

1. **a)** take the shuttle from Luxembourg Airport → Luxembourg Railway Station (2 Euros); **b)** then take the train from Luxembourg Railway Station (16 – 19 Euros according to the train schedule) → Metz Ville (Downtown) Station (about 50 min).
2. **a)** You may take the Eurobus number 16 (2€) from Luxembourg Airport → Luxembourg Railway Station (see [schedules](#)); **b)** then take the train from Luxembourg Railway Station (16 – 19 Euros according to the train schedule) → Metz Ville (Downtown) Station (about 50 min).
3. You may take the **Flibco Bus** from Luxembourg airport → Metz Downtown (14 Euros, with booking on Internet).

### Strasbourg airport → Metz (2 alternatives)

Take a shuttle from Strasbourg Airport → Strasbourg Railway Station (4,40 Euros), then:

1. take an Intercity train (TER) from Strasbourg Railway Station → Metz Ville (Downtown) Station (10 – 37 Euros, according to schedule and promotions).
2. take a High-Speed train (TGV) from Strasbourg Railway Station → Lorraine TGV Station (28 – 44 Euros, according to booking); then take the Shuttle from Lorraine TGV Station → Metz Ville (Downtown) Station (6.10 Euros).

## Bruxelles-Charleroi / Frankfurt-Hahn ([ryanair.com](http://ryanair.com)) airports

From these airports, you can take a Flibco shuttle to Metz ([flibco.com](http://flibco.com)), and early booking enables getting best prices.

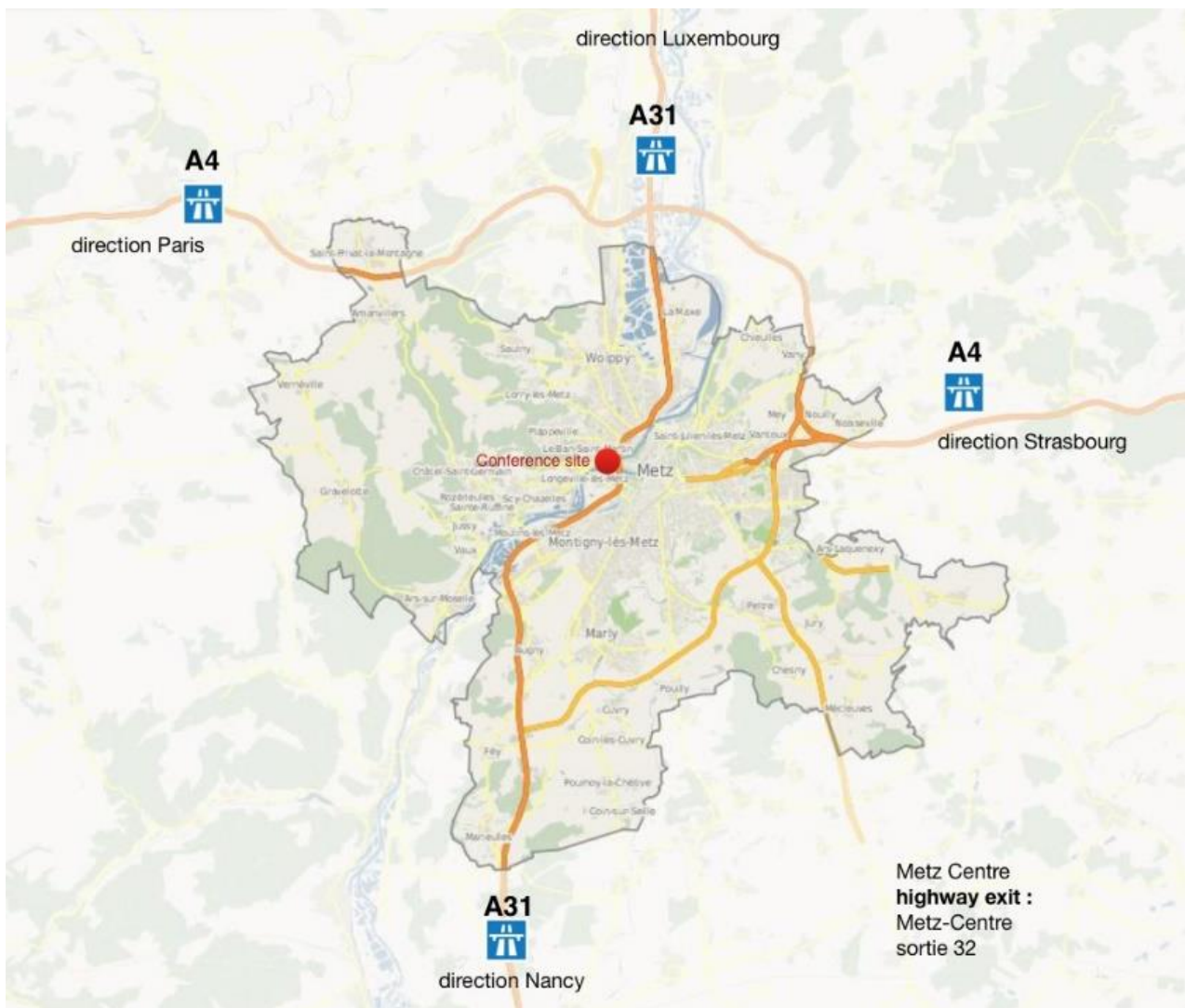
### Frankfurt Airport → Metz (2 alternatives)

1. By Bus: 26-39 Euros (according to the bus schedule)
2. By Train: 57-69 Euros (according to the train schedule)

### Travel to Metz by car

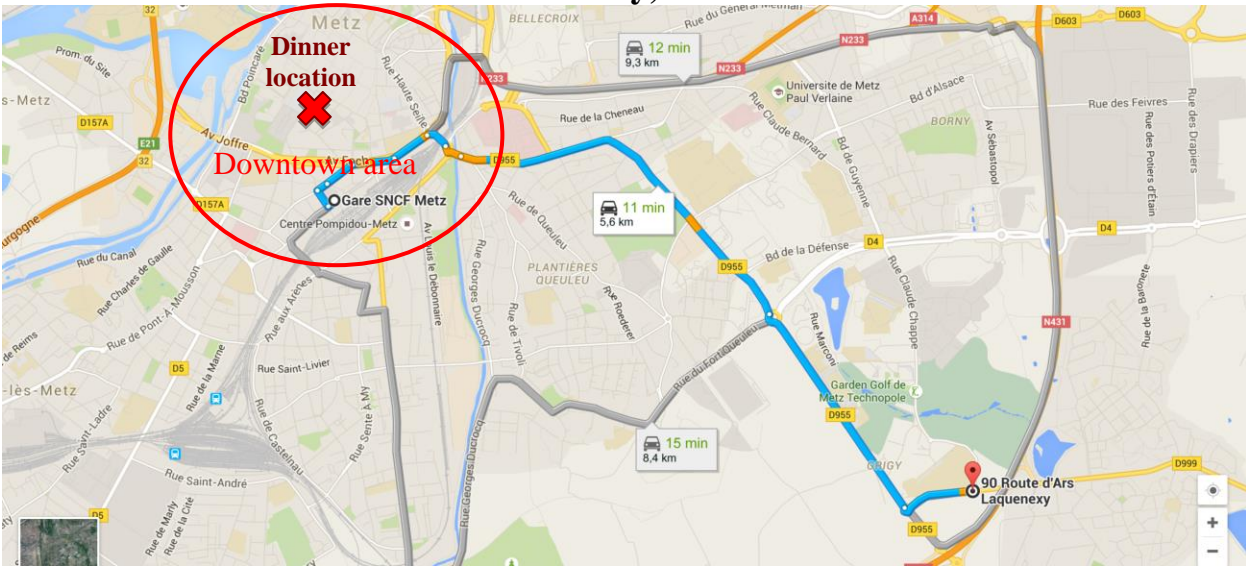
When travelling by car on highway, take the exit *Metz centre*, or *the exit Metz Est*.

The GPS coordinates are: 49°05'32.7"N 6°13'35.7"E

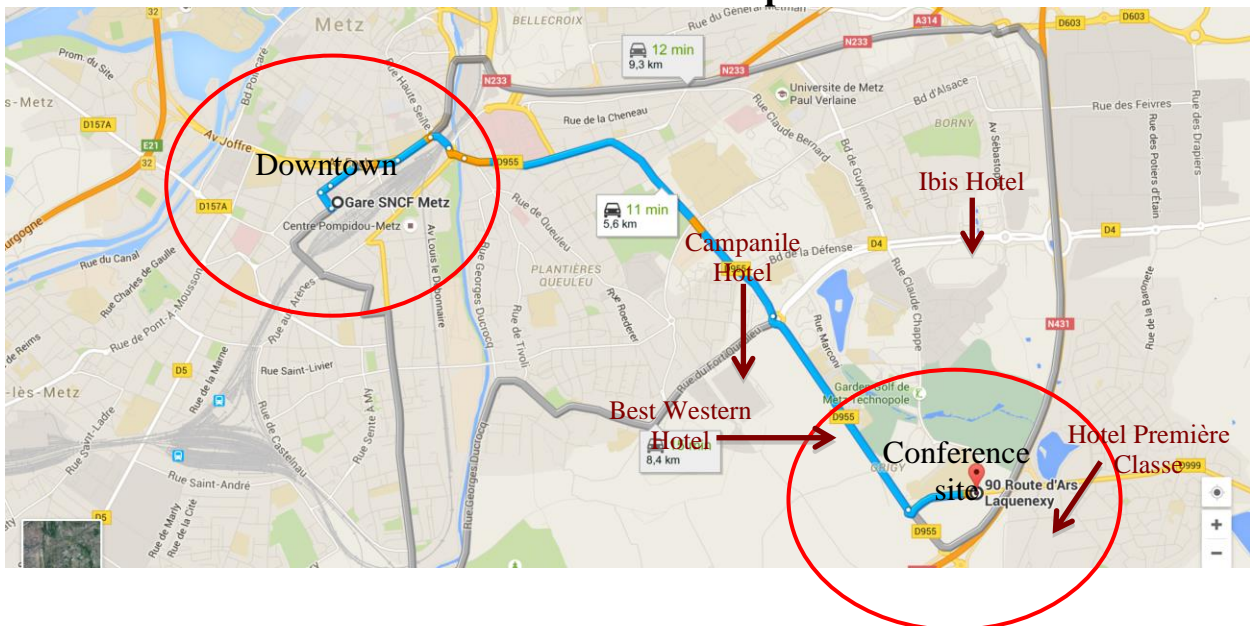




**Conference DINNER**  
**Orangerie, Arsenal building in Metz downtown:**  
**3 Avenue Ney, 57000 Metz.**



**Information on How to Reach the Proposed Conference Site**



**Information on Local Transportation: Bus and Taxi**

The conference site may be reached from downtown hotels by Tramway (1.5 € for one-way Tram ticket) or by Taxi (15 €) or by car within 15 min.  
 It may also be reached from closer hotels by walking or by Tram (10 min)









