



IEEE AICT 2017

4~7 July, Lviv, Ukraine



IEEE



IEEE
UKRAINE SECTION



2ND INTERNATIONAL CONFERENCE ON

ADVANCED INFORMATION AND COMMUNICATION TECHNOLOGIES-2017 (AICT-2017)

Conference Program

July 4 – 7
Lviv, Ukraine

2017

CONFERENCE ORGANIZERS

Lviv Polytechnic National University
Kharkiv National University of Radio Electronics
IEEE Ukraine Section
IEEE Ukraine Section (West) AP/ED/MTT/CPMT/SSC Joint Chapter

**Conference General Chair – Prof. Yuriy Bobalo,
Rector of Lviv Polytechnic National University**

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WELCOME MESSAGE FROM THE ORGANIZERS



Conference General Chair, Prof. Yuriy Bobalo

On behalf of the Organizing Committee, it is with great pleasure that we welcome you to the 2017 International Conference on Advanced Information and Communication Technologies (AICT'2017), held in the magnificent city of Lviv, the "culture capital" of Ukraine. AICT-2017 will be an excellent presentation event, offering the opportunity for researchers, engineers and business people to exchange ideas and discuss state-of-the-art solutions for ICT area. Here, the present and the future of Information and Communications Technologies will be discussed with professionals from Cisco, Ukrtelecom, SoftServe, Lohika.

Lviv is one of the most exciting cities in Europe and increasingly recognized as one of the leading scientific and education center with its 12 universities, 8 academies and more than 40 research institutes. The city is known as a center of art, literature, music and theatre. Nowadays, the indisputable evidences of the city cultural richness are a big number of theatres, concert halls, creative unions, and also high number of many artistic activities. Lviv's historic center has been on the United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage list since 1998. We hope that everyone will find something to enjoy and have a great and memorable stay in Lviv.

We would like to thank all the members of the Organizing and Technical Program Committees, as well as the numerous reviewers, paper authors, presenters, speakers and volunteers, who have worked diligently to make this conference a great success. Last, but not least, the support of all our patrons, exhibitors, and supporters is greatly appreciated.

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PROGRAM AT A GLANCE

July 4 Tuesday	09:00-10:00	Registration
	10:00-13:00	Plenary Session
	13:00-14:00	Coffee Break
	14:00-16:00	Regular Sessions
	16:00-18:00	Welcome Party
July 5 Wednesday	09:00-10:00	Registration
	10:00-13:00	Plenary Session
	13:00-14:00	Lunch
	14:00-16:00	Regular Sessions
	16:00-18:00	Social Event: Excursion
July 6 Thursday	10:00-13:00	Regular Sessions
	13:00-14:00	Lunch
	18:00-21:00	Social Event: The Lviv Opera: Ukrainian Cossack Across the Danube
July 7 Friday	10:00-11:00	Conference Final Session

CONFERENCE TIMETABLE

Time	July 4 Tuesday	July 5 Wednesday		July 6 Thursday
09:00-10:00	Registration <i>Room 217, Main Building</i>	Registration <i>Room 217, Main Building</i>		-
10:00-13:00	Plenary Session <i>Room 217, Main Building</i>	Plenary Session <i>Room 217, Main Building</i>		Session 4, <i>Room 213, Building 11</i> Session 5, <i>Room 218, Building 11</i>
13:00-14:00	Coffee Brake <i>Café, Main Building</i>	Lunch <i>University Canteen</i>		Lunch <i>University Canteen</i>
14:00-16:00	Session 1, <i>Room 217, Main Building</i>	Session 2, <i>Room 226, Main Building</i>	Session 3, <i>Room 217, Main Building</i>	-
16:00-18:00	Welcome Party <i>University Canteen</i>	Social Event: Excursion		-
18:00-21:00	-	-		Social Event: The Lviv Opera: Ukrainian Cossack Across the Danube

TIME LIMITS

Plenary session: up to 30 min	Regular sessions: up to 20 min
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July 4, Tuesday

PLENARY SESSION

10.00 – 13.00

Room 217, Main Building of
Lviv Polytechnic National University

Co-Chairs:

Prof. Mykhailo Klymash and Prof. Andriy Luntovskyy
Session Secretary – Dr. Bohdan Buhyl

- | | | |
|----|--|---|
| 1. | Yuriy Bobalo | Conference official opening |
| 2. | Nataliya Chukhray | Welcome speech from Lviv Polytechnic National University |
| 3. | Ievgen Pichkalov | Welcome speech from IEEE Ukraine Section |
| 4. | Mykhailo Andriychuk | Welcome speech from IEEE Ukraine Section (West) AP/ED/MTT/CPMT/SSC Joint Chapter |
| 5. | Andriy Luntovskyy, Dietbert Guetter and Mykhailo Klymash | Up-to-date Paradigms for Distributed Computing |
| 6. | Orest Lavriv, Bohdan Buhyl, Mykhailo Klymash and Ganna Grynkevych | Services Continuous Integration Based on Modern Free Infrastructure |
| 7. | Andriy Alimpiev, Vladimir Barannik, Volodymyr Larin and Yuriy Ryabukha | Method of image segments compression based on two-level local position representation of vectors |
| 8. | Oleksandra Yeremenko, Oleksandr Lemeshko, Nadia Tariki and Ahmad M. Hailan | Research of Optimization model of Fault-Tolerant Routing with Bilinear Path Protection Criterion |
| 9. | Ivan Lisovyy and Galina Pylypenko | Simulation of Routing Process Based on Fuzzy Logic |

SESSION 1**Internet of Things****14.00 – 16.00**Room 217 Main Building of
Lviv Polytechnic National University**Chairman – Prof. Mykhailo Klymash***Session Secretary – PhD student Zenoviy Kharkhalis*

- | | | |
|----|--|---|
| 1. | Victor Gorbachev, Ivan Vikulin,
Anna Gorbacheva, Victoria
Krasova and Sergey Polakov | Economical transducers of environmental
parameters to a frequency for the end devices of
IoT |
| 2. | Oleg Velychko, Dmytro Kalian,
Valerii Koval and Oleksandr
Samkov | Terminal devices for synchro-information systems
with adaptive properties for IoT |
| 3. | Olena Starkova, Kostiantyn
Herasymenko, Ganna Vlasyuk,
Yurii Kravchenko and Andrii
Polianytsia | Implementation of the Internet of things concept for
remote power management |
| 4. | Maria Vistak, Zinoviy Mykytyuk,
Orest Sushynskyi, Yulia Horbenko,
Vasyl Dmytrah and Valentyn
Prysiashniuk | Optical triglycerides biosensor on the base of
cholesteric liquid crystals |

July 5, Wednesday

PLENARY SESSION

10.00 – 13.00

Room 217, Main Building of
Lviv Polytechnic National University

Co-Chairs:

Prof. Minhó Jo and Prof. Oleksandr Lemeshko

Session Secretary – Dr. Taras Maksymyuk

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|----|---|--|
| 1. | Taras Maksymyuk, Mykola Brych, Mykhailo Klymash and Minhó Jo | Cooperative Channels Allocation in Unlicensed Spectrum for D2D Assisted 5G Cellular Network |
| 2. | Volodymyr Chervenets, Vasyl Romanchuk, Oksana Puha and Oryslava Bilyk | Quality Increasing of Traffic Flow Transferring in Multiservice Networks |
| 3. | Seyit Alperen Celtek, Mahmut Durgun and Hakki Soy | Internet of Things Based Smart Home System Design Through Wireless Sensor / Actuator Networks |
| 4. | Mykola Beshley, Oleksiy Panchenko and Vasyl Romanchuk | Design of Software Router with a Modular Structure and Automatic Deployment of Virtual Nodes |
| 5. | Vasyl Lytvyn, Roman Peleshchak and Ivan Peleshchak | The compression of the input images in neural network that using method diagonalization the matrices of synaptic weight connections |
| 6. | Valeriy Bezruk (invited speaker) | Planning of Mobile Communication Networks by Multicriteria Optimization Methods |
| 7. | Ivan Demydov and Zenoviy Kharkhalis | The Synthesis Methodology of Scalable Telecommunication Service Platforms |
| 8. | Mahmut Durgun, Seyit Alperen Celtek, Yeliz Durgun and Levent Gokrem | The Design and Implementation of Web of Low-Power Wireless Temperature Monitoring and Alarm System |

SESSION 2

Services

14.00 – 16.00

Room 226 Main Building of
Lviv Polytechnic National University

Chairman – Prof. Andriy Luntovskyy
Session Secretary – Dr. Mykola Beshley

1. Manizhe Abbasi, Abdalhossein Rezaei and Asghar Karimi **A novel approach for improving the modular exponentiation performance**
2. Alexander Zadereyko, Nataliia Loginova, Alexander Troyanskiy and Elena Trofimenko **The implementation of depersonalization algorithm of digital images**
3. Arkadiy Prodeus and Kateryna Kukharicheva **Automatic Speech Recognition Performance for Training on Noised Speech**
4. Evgeniy Lavrov, Nadiia Pasko, Andrii Tolbatov and Volodymyr Tolbatov **Ergonomic reserves for improving reliability of data processing in distributed banking systems**
5. Evgeniy Lavrov, Nadiia Pasko, Andrii Tolbatov and Volodymyr Tolbatov **Cybersecurity of distributed information systems. The minimization of damage caused by errors of operators during group activity**
6. Evgeniy Lavrov, Natalia Barchenko, Nadiia Pasko and Andrii Tolbatov **Development of adaptation technologies to man-operator in distributed e-learning systems**
7. Svitlana Agadzhanova, Oleksandr Viunenko, Andrii Tolbatov and Olena Tolbatova **Using cloud technologies based on intelligent agent-managers to build personal academic environments in e-learning system**
8. Halyna Kushnir, Serhii Vashchilin and Yaroslav Dorogyy **Comparison plagiarism search algorithms implementations**
9. Oleh Zaritskiy, Petro Pavlenko, Andrii Tolbatov, Volodymyr Sudic, Volodymyr Tolbatov, Oleksandr Viunenko, Sergii Tolbatov and Olena Tolbatova **Theoretical bases, methods and technologies of development of the professional activity analytical estimation intellectual systems**
10. Artem Kazarian and Vasyl Teslyuk **Structure and model of the smart house security system using machine learning methods**

11. Vyacheslav Treityak and Petr Pavlenko **Informative support of acceptance of administrative decisions is on the basis of integration of productive data**
12. Tetiana Troianovska and Serhii Zakharchenko **Method of cyclic ADC calibration by the conversion characteristics analysis**
13. Ahmet Anil Müngen and Mehmet Kaya **Quad Motif-Based Influence Analyse of Posts in Instagram**
14. Dmytro Karpa, Vasyl Teslyuk and Andriy Zelinskyy **The structure of the user's health state diagnostic and predicting system on the basis of the neural network**
15. Oleh Boreiko and Vasyl Teslyuk **Model of data collection controller of automated processing systems for passenger traffic public transport «smart» city based on Petri nets**

SESSION 3

Management

14.00 – 16.00

Room 217 Main Building of
Lviv Polytechnic National University

Chairman – Prof. Oleksandr Lemeshko
Session Secretary – PhD student Yuliya Klymash

1. Viktor Morozov, Olena Kalnichenko and Iuliia Liubyma **Managing Projects Configuration In Development Distributed Information Systems**
2. Olena Tykhonova **Conveyor Transporting Latency Control in Heterogeneous Packet Based Network**
3. Oleksandr Mozhaev, Heorgii Kuchuk, Nina Kuchuk, Mykhailo Mozhaev and Mykhailo Lohvynenko **Multiservice Network Security Metric**
4. Serhii Harkusha and Olena Harkusha **A Model of Resource Allocation in a Mesh-Net LTE Presented as a Hypergraph**
5. Yaroslav Matviychuk **Reduction Principle of the Mathematical Model**
6. Irina Strelkovskaya, Irina Solovskaya and Anastasiya Makoganiuk **Finding some QoS characteristics of self-similar traffic serviced by a mobile network**
7. Esra Gündoğan and Buket Kaya **A Recommendation Method Based on Link Prediction in Drug-Disease Bipartite Network**

July 6, Thursday

SESSION 4

Wireless Technologies

10.00 – 13.00

Room 213, Building 11 of
Lviv Polytechnic National University

Chairman – Dr. Yaroslav Matviychuk

Session Secretary – PhD student Zenoviy Kharkhalis

- | | | |
|-----|---|---|
| 1. | Serhii Osypchuk, Leonid Uryvsky and Alina Moshynska | Efficiency analysis of signal-code sequences selection algorithms in IEEE 802.11 equipment |
| 2. | Volodymyr Pelishok and Yaroslav Sukhyi | Optimization of forming digital quadrature modulations |
| 3. | Nataliya Dorosh | Multifunctional mobile information system with feedback for analysis of human health and improved access to medical services |
| 4. | Olena Osharovska, Mikola Patlayenko and Volodymyr Pyliavskyy | Transfer Rates for the Introduction of Multimedia Broadcast Multicast Service |
| 5. | Vladimir Barannik, Mykhailo Lytvinenko, Dmitry Okladnoy and Oleg Suprun | Description of the OFDM symbol with the help of mathematical laws. Analysis of technologies that were used in this case |
| 6. | Vladimir Barannik, Yuriy Ryabukha, Vitaliy Tverdokhleб and Dmitriy Barannik | Methodological basis for constructing a method for compressing of transformants bit representation, based on non-equilibrium positional encoding |
| 7. | Bohdan Mandziy, Ksenia Chaban, Yuriy Shapovalov and Dariya Bachyk | The Research of the Synchronous Detector of the Phase-Shift Keyed Signals in the system UDF MAOPCs |
| 8. | Vyacheslav Vakas, Dmytro Domin and Oleksii Kulinskyi | Monitoring of stability of synchronization parameters in LTE network |
| 9. | Halyna Beshley, Marian Seliuchenko and Mykhailo Klymash | Improving architecture of LTE mobile network for IoT services provisioning |
| 10. | Eugen Šlapak, Marcel Vološin, Juraj Gazda and Vladimír Gazda | The economy model of the multi-homing based dynamic spectrum access networks |

11. Olena Krasko, Haider Al-Zayadi,
Andriy Masyuk and Mykhailo
Klymash **Enhanced MAC Design for Convergence of 5G
Backhaul Network**
12. Anatoly Semenko, Natalia Bokla
and Kateryna Domracheva **Analysis of telecommunication systems
interference with multiposition phased-shift signal**

SESSION 5

Networking

10.00 – 13.00

Room 218, Building 11 of
Lviv Polytechnic National University

Chairman – Dr. Bohdan Strykhaliuk
Session Secretary – Dr. Bohdan Buhyl

- | | | |
|-----|--|---|
| 1. | Volodymir Virt, Gryhoriy Barylo, Roman Holyaka, Maria Vistak, Zenon Hotra and Fedir Vezyr | Parametric analysis of impedance spectroscopy measuring transducers considering the non-harmonic signals |
| 2. | Arkadii Snihurov and Vadym Chakrian | Research on Impact of Router Critical System Resources on Traffic Routing Process |
| 3. | Oleksiy Nedashkivskiy | Precise method of balancing passive optical networks with irregular splitter with two or more outputs |
| 4. | Alexander Shmat'Ko, Viktoriya Mizernik, Eugene Odarenko and Tatiana Rokhmanova | Bragg Reflection and Transmission of Light by One- Dimensional Gyrotropic Magnetophotonic Crystal |
| 5. | Ivan Katerynychuk, Oleg Borovyk, Roman Rachok and Mykhailo Darmoroz | Defining approach to rational opto-electronic surveillance system towers placement |
| 6. | Heorhii Rozorinov, Kirill Trapezon, Anna Vlasjuk, Nina Chichikalo, Aymen Fendri and Yuliya Pilkevich | Features Virtualization Software Telecommunications Networks by Means of Simulation Riverbed Modeler |
| 7. | Tamara Radivilova, Lyudmyla Kirichenko and Oleksandra Yeremenko | Calculation of routing value in MPLS network according to traffic fractal properties |
| 8. | Anatolii Lozkovskyi | Simplified calculation of the Hurst coefficient by the R/S-analysis method |
| 9. | Oleksandra Yeremenko, Maryna Yevdokymenko and Anatolii Persikov | Flow-Aware Approach of Evaluating Probability of Compromise in Combined Structure Network |
| 10. | Oleksandr Lemeshko, Andriy Ilyashenko, Olena Nevzorova and Ahmed Mhamed Mal-Allah | Method of Segment Hierarchical Coordination Routing in Multi-Area Network |
| 11. | Maryan Kyryk, Nazar Pleskanka and Maryana Pleskanka | The efficiency and productivity of the CDNs |

12. Andriy Fechan, Iryna Kremer, Yuriy Bashtyk and Oksana Boyko **Computer simulation of optical and dynamic properties of the polymer - liquid crystal system for optoelectronics devices**
13. Volodymyr Kolchar and Ivan Lisovyy **Time characteristics of entry in synchronism of device synchronization boundaries of elementary signals**
14. Serhiy Toliupa, Tetyana Babenko, Ivan Parkhomenko **The method of forming and signal processing aimed at improving stealth and energy efficiency**
15. Oleksandr Manko, Vyacheslav Vakas, Valeriy Gladkih and Olexiy Konovalov **Method of soliton pulses formation**
16. Pavel Pustovoitov and Galina Sokol **The model of dual channel network node with shared memory**

CONFERENCE VENUE



12, S. Bandera Str. – Main Building of Lviv Polytechnic National University

2, Profesorska Str. – Academic Building 11 of Lviv Polytechnic National University