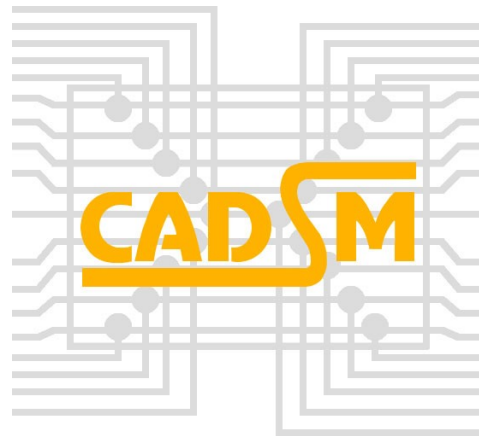




CONFERENCE PROGRAMME



**2021 IEEE 16th International Conference on
the Experience of Designing and Application
of CAD Systems (CADSM)**

<http://cadsm.ieee.org.ua>

**22-26 February, 2021
Lviv, Ukraine**

ORGANIZED BY



Department of Computer-Aided Design
Institute of Computer Science and Information
Technologies,
Lviv Polytechnic National University



**Department of Microelectronics and Computer
Science**
Lodz University of Technology



**IEEE Ukraine Section (West) MTT/ED/AP/EP/SSC
Societies Joint Chapter**

IN TECHNICAL CO-SPONSORSHIP WITH



Ministry of Science and Education of Ukraine
Lviv Polytechnic National University



IEEE Ukraine Section

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Format of the CADSM Conference

The COVID-19 pandemic has affected many parts of our lives, as well as the way the conferences are organized. Initially, when our CADSM-2021 conference was planned, we have sincerely believed that the COVID-19 will be over. However, due to the new regulations and following social distancing recommendations, we have decided to shift our conference to the virtual meeting.

ORGANIZING COMMITTEE

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Head of CAD Department,
Lviv Polytechnic National University, Ukraine

Prof. Andrzej Napieralski,
Lodz University of Technology, Poland

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2021 IEEE 16th International Conference on the Experience of Designing and Application of CAD Systems (CADSM)

22-26 February, 2021
Lviv, Ukraine

CADSM-2021 Conference Program Overview

Monday, February 22	
10 ⁰⁰ -13 ⁰⁰	PLENARY Chairman: Prof. Mykhaylo Lobur Secretary: Dr. Nazariy Andrushchak
13 ⁰⁰ -14 ⁰⁰	Coffee Break
14 ⁰⁰ -16 ⁰⁰	Session 1 Chairman: Prof. Mykhaylo Andriychuk Secretary: Dr. Natalia Bokla

Tuesday, February 23		
10 ⁰⁰ -12 ⁰⁰	Session 2 Chairman: Prof. Sergiy Shcherbovskyyh Secretary: Dr. Oleksandr Belej	Session 2 Chairman: Prof. Anatoliy Melnyk Secretary: Dr. Natalia Bokla
12 ⁰⁰ -14 ⁰⁰	Coffee Break	
14 ⁰⁰ -16 ⁰⁰	Session 3 Chairman: Dr. Wojciech Zabierowski Secretary: Dr. Oleksandr Belej	Session 3 Chairman: Prof. Oleksandr Lemeshko Secretary: Dr. Natalia Bokla

Wednesday, February 24	
10^{30} - 11^{45}	Session 4 Chairman: Dr. Nazariy Andrushchak Secretary: Dr. Olena Lukachuk

Wednesday, February 24		
12^{00} - 13^{45}	Session 5 Chairman: Dr. Nazariy Jaworski Secretary: Dr. Uliana Marikutsa	Session 5 Chairman: Dr. Lukasz Starzak Secretary: Dr. Natalia Bokla

Thursday, February 25	
10^{00} - 11^{00}	General Discussion, Conference Closing

TIME OF PRESENTATIONS

Oral presentation at the plenary session – 25-30 min.

Oral presentation at the regular session – 10 min.

Discussion, questions – up to 5 min.

REGISTRATION

Monday, February 22
9³⁰-10⁰⁰

Registration of participants. Q&A session.

PLENARY SESSION

Monday, February 22
10⁰⁰-13⁰⁰

Chairman: Prof. Mykhaylo Lobur
Secretary: Dr. Nazariy Andrushchak

10:00-10:10	<p>Speech of the Honorary CADSM-2021 Conference Chairperson Prof. Mykhaylo Lobur <i>Head of CAD Department of Lviv Polytechnic National University, Ukraine</i></p>
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10:10-10:20	<p>Speech of the CADSM-2021 Conference Chairperson Dr. Nazariy Andrushchak <i>CAD Department of Lviv Polytechnic National University, Ukraine</i></p>
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10:20-10:40	<p>The role of IEEE in Ukraine Prof. Felix Yanovsky <i>National Aviation University, Ukraine</i> <i>Chairperson of the IEEE Ukraine Section</i></p>
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Keynote speakers

10:40-11:10	<p>Prof. Yevhen Yashchyshyn <i>Warsaw University of Technology, Poland</i> Sub-terahertz properties and applications of composite materials and heterostructures containing graphene</p>
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11:10-11:40	<p>Prof. Felix Yanovsky <i>National Aviation University, Ukraine</i> Experience of modeling and signal processing at radar design for remote sensing of environment</p>
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12:10-12:40	<p>Dr. Taras Maksymyuk <i>Lviv Polytechnic National University, Ukraine</i> How Blockchain and AI is Driving the Future Internet Evolution Beyond 5G?</p>
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SESSION 1

Monday, February 22 14 ⁰⁰ -16 ⁰⁰	
Chairman: Prof. Mykhaylo Andriychuk Secretary: Dr. Natalia Bokla	
14:00-14:15	Oleh Ivashchuk, Ivan Ostroumov, Olha Sushchenko, Nataliia Kuzmenko, Maksym Zaliskyi, Yuliya Averyanova, Felix Yanovsky, Oleksandr Solomentsev and Olga Shcherbyna <i>A Configuration Analysis of Ukrainian Flight Routes Network</i>
14:15-14:30	Natalia Pasichnyk, Dmytro Komarchuk, Oleksiy Opryshko, Serhii Shvorov, Volodymyr Reshetiuk and Bahatska Oksana <i>Technologies for environmental monitoring of the city</i>
14:30-14:45	Ivan Tsmots, Vasyl Rabyk, Oleg Berezky, Yurii Lukaschuk and Vasyl Teslyuk <i>Development Of Modules Of Neuro-Like Cryptographic Encryption And Decryption Of Data And Their Implementation On FPGA</i>
14:45-15:00	Maksym Zaliskyi, Oleksandr Solomentsev, Roman Odarchenko, Olga Shcherbyna, Lidiia Tereshchenko and Viktor Gnatyuk <i>Sequential Estimation of Reliability Parameters of Telecommunication and Radioelectronic Systems</i>
15:00-15:15	Andrii Volovyk, Dmytro Havrilov, Leonid Koval, Mikola Vasylykivskyi, Dmytro Yarovyi and Andriy Semenov <i>Design of Spectrum Analyzer for Radio Signals</i>
15:15-15:30	Mykhailo Medvetskyi, Mykola Beshley and Mykhailo Klymash <i>A Quality of Experience Management Method For Intent-Based Software-Defined Networks</i>
15:30-15:45	Valeri Lozovski, Taras Vasyliiev and Georgiy Tarasov <i>Structure Optimization of Layered Plasmonic Nanocomposite Thin Film</i>
15:45-16:00	Ivan Ivanov and Valeriy Skryshevsky <i>Porous Silicon Bragg Reflector Sensor: Applying HSV Color Space for Sensor Characterization</i>

SESSION 2

Tuesday, February 23 10 ⁰⁰ -12 ⁰⁰		
	Chairman: Prof. Sergiy Shcherbovskyh Secretary: Dr. Oleksandr Belej	Chairman: Prof. Anatolii Melnyk Secretary: Dr. Natalia Bokla
10:00-10:15	Maksym Brazhenenko, Viktor Shevchenko, Volodymyr Petrivskyi, Oleksiy Bychkov and Igor Sinitcyn <i>Enabling Big Data Query with Modern CAD Systems Redundant Data Stores</i>	Sergei Yelmanov and Yuriy Romanyshyn <i>Image Enhancement based on Adaptive Power-Law Image Intensity Transformation</i>

10:15-10:30	Natalia Porplytsya, Iryna Spivak, Svitlana Krepych and Serhii Spivak <i>Advanced method of parametric identification of tolerance estimations of the interval vector of discrete dynamic models parameters</i>	Bohdan Sus, Sergiy Zagorodnyuk, Olexander Bauzha, Nazar Diachuk and Aleksey Kozinetz <i>Simulation of remote-controlled power supplies for laboratory and research work</i>
10:30-10:45	Olga Shpur, Yuliia Pyrih, Taras Havryliv, Nazar Peleh, Oksana Urikova and Andrii Branytskyi <i>Development of a Road Traffic Monitoring System</i>	Pavlo Tymoshchuk <i>Design of Parallel Rank-Order Filtering System Based on Discrete-Time Neural Circuits</i>
10:45-11:00	Volodymyr Petrivskyy, Viktor Shevchenko, Oleksii Bychkov, Maksym Brazhenenko and Pavel Petrov <i>CAD technology for optimal territory covering</i>	Anatoliy Vasiljev, Taras Vasyliiev and Tamara Doroshenko <i>Influence of Hydrogen Ions on the Properties of the Plasmon Resonance Sensor</i>
11:00-11:15	Yaroslav Sokolovskyy, Oleksandr Storozhuk, Mariana Levkovich, Igor Kroshnyy, Iryna Boretska and Bogdan Kshyvetsky <i>Mathematical modeling and experimental studies of acoustic wave propagation in anisotropic medium</i>	Oleksandr Plakhtii and Volodymyr Nerubatskyi <i>The Research and Development of a Digital Meter of Parameters of a Three-Phase Network on ADC ADS131E08</i>
11:15-11:30	Mykhailo Klymash, Olena Hordiichuk-Bublivska, Ihor Tchaikovskyy and Marian Kyryk <i>Research of distributed data processing in corporate information systems</i>	Volodymyr Shevchenko, Denis Berestov, Igor Sinitsyn, Viktor Shevchenko and Georgi Dimitrov <i>Automated design of the structure of one-way functions for the modified Diffie-Hellman algorithm</i>
11:30-11:45	Yaroslav Sokolovskyy, Andriy Nechepurenko, Olha Herasymchuk, Olha Mokrytska and Tetiana Samotii <i>Software and Algorithmic Aspects of Automating Finite-element Discretization</i>	Bohdan Diveyev, Ihor Dorosh, Hennadiy Cherchyk, Mykola Ostashuk, Mykhajlo Hlobchak and Myhajlo Kotiv <i>DVA for the High-Rise Object</i>
11:45-12:00	Olexander Belej, Natalia Nestor and Vasyl Tomyuk <i>Application of Hybridization Methods to Detect Network Attacks in Wireless Sensor Networks</i>	Olha Zalevska, Iuliia Sydorenko, Andrii Naidysh, Oleksii Finogenov, Petro Yablonskyi, Tetyana Ladogubets and Ivan Miroschnichenko <i>Construction and study of the mathematical model for the system using three-dimensional cellular automata</i>

SESSION 3

Tuesday, February 23 14⁰⁰-16⁰⁰		
	Chairman: Dr. Wojciech Zabierowski Secretary: Dr. Oleksandr Belej	Chairman: Prof. Oleksandr Lemeshko Secretary: Dr. Natalia Bokla
14:00-14:15	Mykhaylo Andriychuk and Victor Tkachuk <i>Modeling of Radiation Properties of Quasi-Optical Transmitting Lines</i>	Victor Makarichev, Vladimir Lukin and Iryna V. Brysina <i>Lossless Discrete Atomic Compression of Full Color Digital Images</i>

14:15-14:30	Igor Kogut, Victor Holota, Taras Benko, Anatoly Druzhinin, Yuriy Khoferko and Stepan Nichkalo <i>Simulation of Integral Sensor as an Element of the CMOS Inverter</i>	Borys Kuznetsov, Ihor Bovdui and Tetiana Nikitina <i>Optimal Design of System of Active Shielding of Magnetic Field Generated by Overhead Power Lines</i>
14:30-14:45	Hryhorii Barylo, Oksana Boyko, Igor Helzhynskyy, Roman Holyaka, Tetyana Marusenkova and Mariia Ivakh <i>Universal Hardware and Software System of Signal Converting for Integrated Sensor Devices Implementation</i>	Volodymyr Riznyk, Mykhaylo Solomko, Yuriy Tsymbal, Oleg Riznyk, Daniel Skrybailo-Leskiv and Roman Sydorenko <i>Combinatorial Optimization of CAD Systems</i>
14:45-15:00	Vladimir Hahanov, Wajeb Gharibi, Svetlana Chumachenko, Eugenia Litvinova, Vugar Hacimahmud Abdullayev, Tariq Hama Salih and Ivan Hahanov <i>Vector-Qubit models for SoC Logic-Structure Testing and Fault Simulation</i>	Ivan Ostroumov, Nataliia Kuzmenko, Olha Sushchenko, Yuliya Averyanova, Felix Yanovsky, Olga Shcherbyna, Maksym Zaliskyi and Oleksandr Solomentsev <i>Ukrainian Navigational Aids Network Configuration Estimation</i>
15:00-15:15	Oleksiy Chkalov and Nazar Sidelnykov <i>Simulation of Soliton-Defect Interaction in Optical Media</i>	Serhiy Shcherbovskykh, Mykhaylo Lobur and Tetyana Stefanovych <i>Reliability audit of the duplicated wired channel with an accounting of reinforcement and cable jacket</i>
15:15-15:30	Iryna Svyd, Ivan Obod, Oleksandr Maltsev and Ganna Zavolodko <i>Optimizing Airborne Object Detection of Secondary Surveillance Radar in Intra-System Interference Conditions</i>	Oleksandr Lemeshko, Oleksandra Yeremenko, Anastasiia Shapovalova, Ahmad M. Hailan, Maryna Yevdokymenko and Mykhailo Persikov <i>Design and Research of the Model for Secure Traffic Engineering Fast ReRoute under Traffic Policing Approach</i>
15:30-15:45	Nazariy Andrushchak, Volodymyr Dutka and Anatoliy Andrushchak <i>A new Approach of Dielectric Permittivity Investigation of Crystalline and Nanocomposite Materials at SubTerahertz Frequency Range</i>	Volodymyr Andrushchak, Taras Maksymyuk, Mykola Kaidan and Taras Andrukhiv <i>Intelligent Payload and Energy Balancing in Optical Transport Network Using Graph Neural Network</i>
15:45-16:00	Mykhailo Poliakov, Sergey Subbotin and Oleksii Poliakov <i>Performance indicators of models of non-binary control automates</i>	Vitaliy Mazur <i>Robotic Mobile Platform for Container Transportation</i>

SESSION 4

Wednesday, February 24 10³⁰-11⁴⁵	
	Chairman: Dr. Nazariy Andrushchak Secretary: Dr. Olena Lukachuk
10:30-11:30	Viktoriya Permyakova CEO, owner LCC Tour-U <i>Lviv as the best Ukrainian emotional destination</i>
11:30-11:45	Oksana Ivanytska Historical journey at Lviv Polytechnic

SESSION 5

Wednesday, February 24 12 ⁰⁰ -13 ⁴⁵		
	Chairman: Dr. Nazariy Jaworski Secretary: Dr. Uliana Marikutsa	Chairman: Dr. Lukasz Starzak Secretary: Dr. Natalia Bokla
12:00-12:15	Zinovii Nytrebych, Ruslan Politanskyi, Oksana Malanchuk, Roman Petryshyn and Maria Vistak <i>Simulation of Electromagnetic Oscillations in an Active Telegraph Line</i>	Elena Voloshkina, Denis Chernyshev, Volodymyr Efimenko, Iryna Korduba, Olena Zhukova, Viktoriia Shovkivska and Tetyana Kotova <i>Visual modeling of the stress-strain state of landslide slopes for automated design of antilandslide structures</i>
12:15-12:30	Eduard Lysenkov and Leonid Klymenko <i>Development of polyfunctional nanocomposite organic-inorganic polymer materials for sensor devices</i>	Petro Pukach, Andrii Slipchuk, Winfried Auzinger, Roksoyana Stolyarchuk, Yulia Pukach, Andrii Kunynets and Nelya Pabyrivska <i>Asymptotic Method for Studying Mathematical Models of Resonant and Nonresonant Nonlinear Vibrations for Some 1D Moving Bodies</i>
12:30-12:45	Yuriy Shapovalov, Dariya Bachyk, Volodymyr Storozh, Ksenia Detsyk and Roman Romaniuk <i>Research of Long Lines with Constant and Variable Parameters using a Symbolic Method</i>	Tamara Klymkovych, Oleh Matviykyv, Nataliia Bokla and Volodymyr Stakhiv <i>Simulation and Analysis of Microparticles Acoustophoretic Separation in Multi-Channel Lab-Chip Device</i>
12:45-13:00	Petro Kosobutskyi, Nazariy Jaworski and Volodymyr Karkulovskyy <i>Physical Principles of Nanotube Thermal Properties Modeling Using the Cauchy Number Analogue</i>	Olha Sushchenko, Yurii Bezkorovainyi, Volodymyr Golitsyn and Felix Yanovsky <i>Modeling Possibility to Increase Measuring Range of MEMS Inertial Unit</i>
13:00-13:15	Roman Melnyk, Yurii Havrylko and Daryna Hatsosh <i>Printed Circuit Boards Short and Open Defects Detection by Thinning and Flood-fill Algorithms</i>	Olga Gladkova, Anzhelika Parkhomenko, Nadiia Myronenko, Andriy Parkhomenko, Yaroslav Zalyubovskiy and Maksym Andreiev <i>Adaptation of CAD-system Creo for Development of Individual Spinal Implant</i>
13:15-13:30	Volodymyr Savchenko and Oksana Mnushka <i>Simulation of the parameters and temperature characteristics of the BAW QCR based sensors</i>	Olha Krylova, Liudmyla Kryvenko, Sergey Krivenko and Vladimir Lukin <i>A Fast Noniterative Visually Lossless Compression of Dental Images Using AGU-M Coder</i>
13:30-13:45	Zdobytskyi Andriy, Lobur Mykhailo, Panchak Roman, Sika Robert and Krzysztof Kalinowski <i>Increasing the Strength of Materials by Topological Optimization Methods</i>	Alina Nechyporenko, Victoriia Alekseeva, Rosana Nazaryan and Vitaliy Gargin <i>Biometric Recognition of Personality based on Spiral Computed Tomography Data</i>

FINAL SESSION

Thursday, February 25 10 ⁰⁰ -11 ⁰⁰		
10:00-11:00	Concluding reports of Section Chairman. Conference summary. Conference closing.	