

Ministry of Education and Science of Ukraine
Lviv Polytechnic National University
Comenius University Bratislava (Slovakia)
Lodz University of Technology (Poland)
University of Applied Sciences Campus Vienna (Austria)



CONFERENCE PROGRAM

1st International Scientific and Practical Conference “Computational Intelligence and Smart Systems”

October 10-12, 2024



UNIVERZITA
KOMENSKÉHO
V BRATISLAVE



Lodz University
of Technology



PROGRAM COMMITTEE

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Address of Organizing Committee



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Conference web site:

<https://science.lpnu.ua/ciss-2024>

General Information

The conference will be held at the Institute of Computer Sciences and Information Technologies of Lviv Polytechnic National University (28a S. Bandery St., 5th floor, 8th floor) in mixed format.

CONFERENCE SCHEDULE

October 10, 2024

10³⁰-11⁰⁰ Registration of the Conference participants

Work format: mixed (online/offline)

Venue: smart space “Agiliway”, 8th floor, building 5 of LPNU

Online Zoom link:

<https://zoom.us/j/98367497562?pwd=P6xg0G4Jb6QRFO2m5HUBfyGtiYDSQA.1>

11⁰⁰-12³⁰ *Conference opening*

Opening speech of Prof. **Vasyl TESLYUK**, Head of Department of Automated Control Systems, Institute of Computer Sciences and Information Technologies, Lviv Polytechnic National University.

Welcoming speeches

Invited speakers:

- **Ricardo J. Rodríguez**, University of Zaragoza, Spain
“Scaling Smart System Security with Reproducible Machine Learning Approaches”
- **Dr. Maryam Nasser**, Kingston University, London, United Kingdom
“Automated birads scoring for breast cancer using machine learning and image processings”

12³⁰-14⁰⁰ Plenary session

14⁰⁰-15⁰⁰ Coffee break

15⁰⁰-17⁰⁰ Regular session

Regulation

Report: plenary session – up to 15 minutes

regular session – up to 10 minutes

discussion - up to 5 minutes

PLENARY SESSION

12³⁰-14⁰⁰

Work format: mixed (online/offline)

Venue: smart space “Agiliway”, 8th floor, 5 building LPNU

Online Zoom link:

<https://zoom.us/j/98367497562?pwd=P6xg0G4Jb6QRFO2m5HUBfyGtiYDSQA.1>

Section Chairman: Vasyl TESLYUK

Moderators: Mariana SENETA, Anastasiia DOROSHENKO

Artem Kazarian, Vasyl Teslyuk. Implementation of AI-driven information system for scientific and business project ideas generation.
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Roman Lysenko, Oleksa Skorokhoda. Intelligent means of data collection.
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<u>Andrii Pukach, Vasyl Teslyuk.</u> Mathematical model for analysis the influence of impact factors onto the software complexes' support.
<u>Bohdan Borkivskiy, Vasyl Teslyuk.</u> Object detection optimization in closed space using mobile robotic systems with obstacle avoidance.
<u>Volodymyr Chornenkyi, Iryna Kazymyra.</u> Influence of the machine learning model characteristics on performance in mobile apps.
<u>Myroslav Mishchuk, Olena Pavliuk, Mykola Medykovskyy, Olena Litovska.</u> Smartwatch-based human staff activity prediction: the use case of internal logistics systems based on AGVs
<u>Volodymyr Bak, Anastasiia Doroshenko.</u> Challenges and problems of personal data security in AR and VR systems

Coffee break

REGULAR SESSION

15⁰⁰-17⁰⁰

Section Chairman: Ivan TSMOTS

Moderators: Mariana SENETA, Viktor ZVARYCH

Work format: online

Online Zoom link:

<https://zoom.us/j/91928024307?pwd=IRY5mFbdEVOrhSKwPk9bEy5KENIsNd.1>

<u>Ihor Prots'ko, Roman Rykmas, Aleksander Gryshchuk.</u> Analysis of DHT kernel structure formation for synthesis of 15-point fast algorithms.
<u>Oleh Berezsky, Grygoriy Melnyk, Fedir Kudinov.</u> Models and software system for scientific information search.
<u>Anton Shykhmat, Zenoviy Veres.</u> Evaluating cloud IoT services: balancing traffic requirements and costs in AWS and GCP.
<u>Olha Narushynska.</u> The role of byte pair encoding in preprocessing text data for hierarchical classification.
<u>Victor Sineglazov, Alexander Ruchkin.</u> Modified graph-based semi-supervised learning method based on the Poisson's equation.
<u>Emil Faure, Andrii Nykonenko.</u> Noise-to-text method in evaluation of AI-generated texts analysis.
<u>Oleksandr Ohlashennyi, Olha Narushynska.</u> Technical vision system development for multicopter drone identification
<u>Oleh Kopylchak, Iryna Kazymyra.</u> Development of a hybrid algorithm for efficient training course recommendations.
<u>Serhii Hlod, Anastasiia Doroshenko.</u> Methods and means of real-time military objects recognition during martial law in Ukraine.
<u>Maksym Arzubov, Mariia Markiv.</u> Car rental management system optimization using geospatial data.
<u>Oksana Troian.</u> Artificial intelligence-based testing of medical systems
<u>Viktor Syneglazov, Kyrylo Lesohorskyi, Olena Chumachenko.</u> Semi-supervised label propagation based on smoothness augmented consensus.
<u>Volodymyr Tsapiy, Iryna Kazymyra.</u> Gesture control in real-time: a framework for 3d hand pose recognition for smart devices and touchless interfaces.
<u>Dmytro Savchuk, Anastasiya Doroshenko.</u> Traffic accidents prediction in smart cities.

October 11, 2024

Workshop
"Application of Computational Intelligence"

10⁰⁰-16⁰⁰

Section Chairman: Vasyl TESLYUK

Moderator: Iryna KAZYMYRA

Online Zoom link:

<https://zoom.us/j/99425540436?pwd=UBUvTi2bxu6siRszf4znzz7G8yWO3k.1>

Regulation

report: up to 20 minutes

discussion - up to 10 minutes

REGULAR SESSION

12⁰⁰-16⁰⁰

Section Chairman: Oleh BEREZSKY

Moderator: Denys RUDAVSKYI

Work format: online

Online Zoom link:

<https://zoom.us/j/95545497047?pwd=FPPSO6dBVP0ar4AeCvdJPBB04ydZmK.1>

Invited speaker:

14³⁰ - Gordon Hunter, Kingston University, London, United Kingdom

“Applying Artificial Intelligence, Signal and Image Processing to Monitor the Health and Well-Being of Honeybees”

<u>Mykyta Pliukalov</u>, <u>Ihor Prots'ko</u> . Personalised voice control subsystem for a smart home.
<u>Yurii Bilas</u>, <u>Volodymyr Riznyk</u> . Computational intelligence method for emotional gibberish speech synthesis
<u>Victor Sineglazov</u>, <u>Kirill Riazanovskiy</u> . Semi-supervised approach for MRI brain tumor segmentation using 4D atlas priors and Gaussian models
<u>Oleh Berezsky</u>, <u>Pavlo Liashchynskiy</u>, <u>Petro Liashchynskiy</u> . Diagnostics methods and tools in medical systems
<u>Dmytro Khomutnyk</u>, <u>Andrii Pukach</u> . An optimized method development for describing cloud infrastructures.
<u>Uliana Pavliuk</u>, <u>Volodymyr Yarkun</u>, <u>Yuriy Protsyk</u>, <u>Oleksandr Storozhuk</u> . Smart campus conceptual model for modern sustainable university.
<u>Maksym Arzubov</u>, <u>Ivanna Ksondzyk</u> . Smart city sound landscape synthesis system

<u>Oleh Hasii, Mariana Seneta.</u> Potential of Raspberry PI 5 for smart systems and IoT: advantages, capabilities and cost-efficiency
<u>Viktoriia Badz, Vasyi Teslyuk.</u> Approach for determining authorship of English-language texts based on use of convolutional neural networks.
<u>Serhii Holub, Nataliia Khymytsia.</u> Information technology for intelligent monitoring as a tool for historical forecasting
<u>Roman Rykmas, Ihor Prots'ko.</u> Use of discrete transforms in convolutional neural networks.
<u>Kateryna Tkachuk, Kustra Nataliia.</u> Integration cloud-edge computing for neural networks in mobile smart systems
<u>Zoreslava Shpak, Mykhailo Shuvar.</u> Smart home notification system using the Telegram messenger
<u>Sofiia Oleskevych, Mariana Seneta.</u> Applying artificial intelligence for diseases detection in dental domain.
<u>Rostyslav Zahvoiskyi, Iryna Kazymyra.</u> AI tools in complex computing systems monitoring.
<u>Oleksandr Basalkevych, Denys Rudavskyy.</u> Flexible software architecture for wind turbine blade damage calculation.
<u>Markiiian Rakochyi, Mariana Seneta.</u> Smart-systems security with CORS
<u>Olesia Tehlivets, Olha Narushynska.</u> Model and analytical tools for investigating teenager's sleep disorders using accelerometer data
<u>Vladyslav Todorchuk, Iryna Kazymyra.</u> Model and tools for predicting health status changes in users with diabetes based on their activities.
<u>Ivan Danych, Zoreslava Shpak.</u> Practical and educational application for interaction with graphs.
<u>Andrii Palii, Iryna Kazymyra.</u> Information system for organizing training with the use of AI tools

October 12, 2024

REGULAR SESSION

10⁰⁰ - 11⁰⁰

Section Chairman: Yurii OPOTIAK

Moderators: Mariana SENETA, Olha NARUSHYNSKA

Work format: mixed (online/offline)

Venue: smart space "Agiliway", 8th floor, building 5 of LPNU

Online Zoom link:

<https://zoom.us/j/96808431076?pwd=bnYgVROlVo5EdXNjatB1sl7sZpaER5.1>

<u>Liubomyr Vytvytskyi, Anna Gurynovych.</u> Integrating phygital solutions in smart cities to enhance accessibility
<u>Vasyi Teslyuk, Stanislav Ivasiv.</u> Increasing machine learning model efficiency for classifying clothing pattern elements.
<u>Ivan Shpakovych, Volodymyr Mokryi.</u> Information technologies of war-damaged Kakhovka reservoir space monitoring.
<u>Taras Korol, Anna Gurynovych.</u> Traffic management and light control system for solving congestion problem in a smart city.

REGULAR SESSION

Presentation of developments in the field of computational intelligence and smart systems

11³⁰ - 14⁰⁰

Section Chairman: Yurii OPOTIAK

Moderators: Mariana SENETA, Olha NARUSHYNSKA

Work format: mixed (online/offline)

Venue: smart space “Agiliway”, 8th floor, building 5 of LPNU

Online Zoom link:

<https://zoom.us/j/96808431076?pwd=bnygVROIVo5EdXNjatB1sl7sZpaER5.1>

Invited speaker:

Andrii Kravchuk, co-founder of the volunteer organization “Help a Hero”

“How to Ensure FPVs Perform Well for the Assigned Tasks (Як забезпечити хорошу роботу FPV для поставлених завдань)”

1. **Artem Kazarian.** Automated knowledge and skills testing system in a virtual environment using cloud computing technologies (Автоматизована система тестування знань і навичок у віртуальному середовищі з використанням технологій хмарних обчислень).
2. **Maksym Arzubov.** Where to Begin: First Steps in Building Your Own Smart Home Using Home Assistant (З чого почати: перші кроки у створенні власного смарт будинку з використанням Home Assistant)
3. **Oleksandr Ohlashennyi.** Technical vision system for smart systems development (Система технічного зору для застосування у смарт системах).
4. **Orest Borovyj, Roman Pechko.** Image recognition systems for mobile platforms (Системи розпізнавання зображень для мобільних платформ).
5. **Yurii Opotyak.** Tools for creating components of mobile robotics platforms and smart systems (Засоби для створення компонентів мобільних робототехнічних платформ та смарт систем).
6. **Oleh Hasii.** Application of modern microcomputers in the development of smart systems (Застосування сучасних мікрокомп'ютерів у розробці смарт систем).
7. **Ihor Protsko, Oleksandr Hryshchuk, Roman Rylmas.** A software tool for calculating the modular exponent for multi-bit numbers (Програмний засіб обчислення модулярної експоненти для багаторозрядних чисел).
8. **Mykyta Pliukalov, Ihor Protsko.** Voice assistant using voice cloning (Голосовий асистент з використанням клонування голосу).