

Pavlo Radiuk

Associate Professor · Ph.D. in Computer Science

Department of Computer Science, Faculty of Information Technologies, Khmelnytskyi National University, Ukraine

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🌐 radiukpavlo.github.io

🏢 Department profile

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🏠 Google Scholar

📖 Scopus 57216894492

🔗 Web of Science AAA-9727-2021

📄 ResearchGate

🌐 LinkedIn

🐙 github.com/radiukpavlo

📍 Khmelnytskyi, Ukraine

I work on explainable artificial intelligence. My methods map what a deep network has learned onto the features that clinicians and engineers already use, as a transition matrix between the two feature spaces, so that its decisions can be checked and audited. I validate them against expert judgement in cardiac MRI, ECG and chest radiography, and apply them to UAV inspection of wind and solar plants and to urban traffic control. I am a Researcher in the Horizon Europe project U_CAN and technical lead of its Khmelnytskyi traffic pilot, and a full-time doctoral candidate for the Doctor of Science degree.

💡 Research interests

Explainable AI	Transition matrices between a model's feature space and an expert's, extended with Lie-group equivariance, rough-set production rules and conflict-aware auditing.
Medical AI	Explanations for ECG, cardiac MRI and chest radiographs, evaluated against clinical expert judgement.
Energy and UAV inspection	Detection and criticality assessment of defects in wind turbines and photovoltaic plants from UAV imagery.
Smart mobility	Reinforcement-learning signal control and traffic-pattern recognition for urban mobility.

🎒 Academic and research positions

Sep 2025 – present	Associate Professor Department of Computer Science, Faculty of Information Technologies, Khmelnytskyi National University, Khmelnytskyi, Ukraine Teaches eight disciplines at bachelor's, master's and Ph.D. levels, including a master's course taught in English, alongside full-time doctoral research for the Doctor of Science degree.
May 2024 – present	Researcher, Horizon Europe project U_CAN Khmelnytskyi National University, Khmelnytskyi, Ukraine Ukraine towards Carbon Neutrality (grant agreement 101148374), a Coordination and Support Action under the EU Mission for Climate-Neutral and Smart Cities. ▶ Technical lead of the Khmelnytskyi traffic pilot (simulation-based reinforcement-learning signal control)
Dec 2022 – 2024	Associate Professor (part-time) International Humanitarian University (now International University), Odesa, Ukraine Taught Machine Learning at master's level and System Analysis at bachelor's level.
Sep 2022 – Aug 2025	Senior Lecturer Department of Computer Science, Khmelnytskyi National University, Khmelnytskyi, Ukraine
Sep 2021 – Aug 2022	Assistant Department of Computer Science, Khmelnytskyi National University, Khmelnytskyi, Ukraine
Jan 2021 – Aug 2021	Trainee Lecturer Department of Computer Science and Information Technologies, Khmelnytskyi National University, Khmelnytskyi, Ukraine
Sep 2017 – Jun 2018	Teaching Assistant (hourly) Khmelnytskyi National University, Khmelnytskyi, Ukraine
Dec 2016 – Aug 2017	Senior Laboratory Assistant Department of Applied Mathematics and Social Informatics, Khmelnytskyi National University, Khmelnytskyi, Ukraine

🏠 Industry experience

- Sep 2022 – **Data Scientist**
Oct 2023 International e-commerce client (via Nolt Technologies), Khmelnytskyi, Ukraine
Remote engagement delivered through Nolt Technologies.
- NLP recommendation models (sequential transformers) for personalised product recommendations
 - Text-classification models (LSTM, BERT-family) for client segmentation
 - Sales-forecasting and cash-flow prediction models on AWS
- Sep 2022 – present **Data Scientist (advisory)**
Nolt Technologies, Khmelnytskyi, Ukraine
- Research and modelling for data-driven client projects
 - Capability-gap assessment and backlog prioritisation in computer vision
 - Definition and maintenance of evaluation metrics for ongoing projects
- 2019 – 2020 **Business & Data Analyst**
MEDICA.TEC, Khmelnytskyi, Ukraine
Business and data analysis for a medical-technology company.
- Mar 2018 – **Data Analyst / Business Analyst**
Apr 2019 NGO ASTAR (Sustainable Development Agency ASTAR), Khmelnytskyi, Ukraine
- Commissioned market-analysis reports for regional producers
 - Business audit and translation of business objectives into technical requirements
 - Recurring statistical reporting

🎓 Education

- 2025 – 2027 **D.Sc. (Doctor of Science, habilitation level), Information Technologies**
(expected) Khmelnytskyi National University, Khmelnytskyi
Thesis: *Theoretical and Applied Foundations of an Intelligent Information Technology for Interpreting Decisions Made by Artificial Intelligence Systems*
Prof. Oleksander Barmak (scientific consultant)
- 2022 **Ph.D., Computer Science**
Khmelnytskyi National University, Khmelnytskyi
Thesis: *Information Technology for the Early Diagnosis of Pneumonia by Individual Selection of the Parameters of a Classification Model for Medical Images of the Lungs*
Supervisor: Prof. Oleksander Barmak
- 2017 **M.Sc., Mathematical and Computer Modelling**
Khmelnytskyi National University, Khmelnytskyi, with distinction
Thesis: *Optimisation of Filter Size Distribution in Convolutional Neural Networks for Classification Problems*

🏠 Research projects

- May 2024 – **Ukraine towards Carbon Neutrality (U_CAN)**
Apr 2028 Horizon Europe, EU Mission for Climate-Neutral and Smart Cities, grant agreement 101148374
Role: Researcher; technical lead, Khmelnytskyi traffic pilot
A Coordination and Support Action coordinated by Technische Universität Dresden that supports Ukrainian cities on their path to climate neutrality. Khmelnytskyi National University leads the Khmelnytskyi pilot on adaptive traffic management, which develops traffic-pattern recognition and reinforcement-learning signal control and tests them in a calibrated simulation of the city's road network.
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- Funded by
the European Union
- Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.
- Sep 2024 – **Intelligent System for Recognising Defects of Green-Energy Objects Using UAVs**
Aug 2026 Ministry of Education and Science of Ukraine, state-funded research and development, state registration No. 0124U004665
Role: Researcher (executor)
A national project led by West Ukrainian National University with the participation of Khmelnytskyi National University. It develops methods for collecting, recognising and processing UAV imagery to detect defects in wind- and solar-energy installations.

Awards

- 2022–2024 **Scholarship of the Cabinet of Ministers of Ukraine for Young Scientists**
Committee on State Prizes of Ukraine in Science and Technology
National competitive award; Resolution No. 6 of 4 November 2022.
- 2023 **Best Paper Award for Ukrainian authors**
12th IEEE International Conference on Intelligent Data Acquisition and Advanced Computing Systems (IDAACS-2023)
Awarded in Dortmund, Germany, on 9 September 2023 for the paper “Apple detection with occlusions using modified YOLOv5-v1” (O. Melnychenko, O. Savenko, P. Radiuk).

Service

- Peer review 450+ reviews for journals and conferences.
- Programme committees International Conference on Database and Expert Systems Applications (DEXA), 2024–2026
International Conference on Web Information Systems Engineering (WISE), 2024, 2026
MobiWis, 2026
- Editorial Guest Editor, Sustainability (MDPI), 2024–2026
Volume Editor, CEUR Workshop Proceedings, Vol. 4141 (ExplAI-2025), 2025
Editorial Board Member and Handling Editor, Journal of Intelligent & Fuzzy Systems, 2023–2024
- Organising Organising Committee member, Workshop on Advanced AI in Explainability and Ethics for the Sustainable Development Goals (ExplAI), 2025–2026
Lead organiser, International conference “Reducing CO₂ Emissions in Ukrainian Cities: Pathways to Climate Neutrality” (Horizon Europe U_CAN), Khmelnytskyi National University, 2026
- Doctoral defences Reviewer, two one-off specialised academic councils for Ph.D. defences, Khmelnytskyi National University, 2026
Official Opponent, Ph.D. defence, Ternopil Ivan Puluj National Technical University, 2026
- Conference reviewing International Workshop on Intelligent Information Technologies & Systems of Information Security (IntelITSIS), 2022–2026; YAISD, 2025–2026; IEEE International Conference on Advanced Computer Information Technologies (ACIT), 2026; APWeb-WAIM, 2026; International Workshop on Intelligent & CyberPhysical Systems (ICyberPhyS), 2024–2025; IEEE International Conference on Intelligent Data Acquisition and Advanced Computing Systems: Technology and Applications (IDAACS), 2025; International Scientific Symposium “Intelligent Solutions” (IntSol), 2025; International Conference on Web Information Systems Engineering (WISE), 2025; International Conference on Informatics & Data-Driven Medicine (IDDM), 2022–2024; International Workshop on Advanced Applied Information Technologies (AdvAIT), 2024; ICST, 2024.

Teaching

- Ph.D. Project Management in Research and Development; Modern Methodologies, Methods and Tools of Experimental and Theoretical Research in Computer Science.
- Master’s Conducting Experiments and Processing the Results of Scientific Research (in English).
- Bachelor’s Decision Theory and Operations Research; Intelligent Data Analysis ([open course materials](#)); Operations Research and Fundamentals of Decision Theory; Probability Theory and Statistical Data Processing; Statistical Data Processing.

Skills and languages

- Machine learning [Deep learning](#) [PyTorch](#) [TensorFlow](#) [Keras](#) [Computer vision](#) [NLP and LLMs](#) [Reinforcement learning](#) [scikit-learn](#) [XGBoost](#) [Explainable AI](#)
- Engineering [Python](#) [TypeScript](#) [C#](#) [SQL](#) [AWS](#) [Docker](#) [Git](#) [PostgreSQL](#) [MySQL](#)
- Analysis and simulation [Statistical modelling](#) [Forecasting](#) [SUMO](#) [PTV Visum](#) [Power BI](#) [Tableau](#)
- Languages Ukrainian — native; English — professional working proficiency (CEFR B2 certified; teaches and publishes in English).

🤝 Collaboration

I welcome partners for Horizon Europe, MSCA and EuroHPC proposals in these roles.

XAI methods lead	Task or work-package lead for explainable and trustworthy AI: transition-matrix explanations, rough-set rule extraction and audit protocols that domain experts can check.
Medical AI partner	Explainable deep learning for ECG, cardiac MRI and chest radiographs. Explanations for ECG and cardiac MRI have been evaluated against clinical expert judgement, with Cohen's kappa of 0.89 and 0.80 respectively.
Energy & UAV inspection	UAV-based detection and criticality assessment of defects in wind turbines and photovoltaic modules from RGB, thermal and multispectral imagery, developed with Ukrainian and Polish partners.
Ukrainian pilot site	Khmelnytskyi National University as a pilot site in Ukraine, drawing on the U_CAN Khmelnytskyi traffic pilot: a calibrated city-scale traffic simulation, joint training with the city council and an international conference organised in 2026.
Organisation	Khmelnytskyi National University, Participant Identification Code (PIC) 964860456. Capability statement, biographies and photograph: radiukpavlo.github.io/partner-kit .

📄 Publications

76 works: 38 journal articles, 34 conference papers, 2 book chapters and 2 preprints. Own name in bold; [†] marks a mentored junior researcher. Each work links to its DOI or publisher page, with open-access PDFs and code where available; the list with BibTeX is at radiukpavlo.github.io/publications.

Citation indicators each database counts its own coverage, so figures are not summed

Database	Documents	Citations	h-index	i10-index	As of
Google Scholar	–	1,158	17	24	14 Oct 2026
Scopus	53	333	10	–	12 Oct 2026
Web of Science Core Collection	25	131	7	–	12 Oct 2026

Journal articles 38

- J38 **A Geo-consistent Weather Augmentation Method for Improving UAV Localization Robustness under Adverse Meteorological Conditions**
V. Vozniak[†], O. Barmak, **P. Radiuk**, I. Krak.
Journal of Intelligent & Robotic Systems, 2026. doi:10.1007/s10846-026-02454-1
- J37 **A method for sentiment analysis of customer reviews based on hybrid classification models for automating feedback in IT project management**
B. Zahurskyi, E. Manziuk, T. Skrypyuk, **P. Radiuk**.
Measuring and Computing Devices in Technological Processes No. 3, pp. 487–496, 2026 (in Ukrainian). doi:10.31891/2219-9365-2026-87-56 · PDF
- J36 **Architecture of cyberphysical systems for UAV-based late-fusion defect detection in photovoltaic modules**
A. Sachenko, **P. Radiuk**, A. Lysyi, O. Melnychenko, O. Zastavnyy.
INNOVATIVE TECHNOLOGIES AND SCIENTIFIC SOLUTIONS FOR INDUSTRIES No. 1(35), pp. 79–99, 2026. doi:10.30837/2522-9818.2026.1.079 · PDF
- J35 **Automated Synthesis of Hierarchical Deep Learning Cascades for Identifying Visually Similar Objects in UAV Imagery**
D. Borovyk[†], O. Barmak, **P. Radiuk**, I. Krak.
Technologies 14(6):360, 2026. doi:10.3390/technologies14060360 · PDF
- J34 **CARDIA-X: Global Semantic Transition and Rough-Set Rules for Auditable Post Hoc Electrocardiographic Explainability**
P. Radiuk, O. Barmak, L. Klymenko, I. Krak.
AI 7(9):376, 2026. doi:10.3390/ai7090376 · PDF · Code
- J33 **Equivariant Transition Matrices for Explainable Deep Learning: A Lie Group Linearization Approach**
P. Radiuk, O. Barmak, L. Bedratyuk, I. Krak.
Machine Learning and Knowledge Extraction 8(4):92, 2026. doi:10.3390/make8040092 · PDF · Code
- J32 **SEMTRA: Global Semantic Transition and Rough-Set Rules for Auditable Post-Hoc Explainability**
P. Radiuk, O. Barmak, I. Krak.
Machine Learning and Knowledge Extraction 8(7):181, 2026. doi:10.3390/make8070181 · PDF · Code

- J31 **Topography-Aware Deep Reinforcement Learning with Contextual Reward Engineering for Sustainable and Efficient Urban Traffic Control**
O. Ryzhanskyi[†], O. Barmak, E. Manziuk, P. Radiuk, I. Krak.
Future Transportation 6(2):82, 2026. doi:10.3390/futuretransp6020082 · PDF
- J30 **WEDD-RST: An interpretive approach to detecting defects in photovoltaic panels in cyber-physical systems**
P. Radiuk, A. Sachenko, O. Melnychenko, R. Brukhanskyi, A. Kashtalian.
INNOVATIVE TECHNOLOGIES AND SCIENTIFIC SOLUTIONS FOR INDUSTRIES No. 2(36), pp. 153–172, 2026. doi:10.30837/2522-9818.2026.2.153 · PDF
- J29 **A method for interpreting fake news detection results using a large language model**
S. Vovk, P. Radiuk, T. Skrypnyk.
Herald of Khmelnytskyi National University. Technical Sciences 359(6.2), pp. 149–156, 2025 (in Ukrainian). doi:10.31891/2307-5732-2025-359-91 · PDF
- J28 **An Adaptive Machine Learning Approach to Sustainable Traffic Planning: High-Fidelity Pattern Recognition in Smart Transportation Systems**
V. Pavlyshyn[†], E. Manziuk, O. Barmak, P. Radiuk, I. Krak.
Future Transportation 5(4):152, 2025. doi:10.3390/futuretransp5040152 · PDF
- J27 **Criticality Assessment of Wind Turbine Defects via Multispectral UAV Fusion and Fuzzy Logic**
P. Radiuk, B. Rusyn, O. Melnychenko, T. Perzynski, A. Sachenko, S. Svystun[†], O. Savenko.
Energies 18(17):4523, 2025. doi:10.3390/en18174523 · PDF
- J26 **DyTAM: Accelerating Wind Turbine Inspections with Dynamic UAV Trajectory Adaptation**
S. Svystun[†], L. Scislo, M. Pawlik, O. Melnychenko, P. Radiuk, O. Savenko, A. Sachenko.
Energies 18(7):1823, 2025. doi:10.3390/en18071823 · PDF
- J25 **Enhanced fire hazard detection in solar power plants: an integrated UAV, AI, and SCADA-based approach**
A. Lysyi, A. Sachenko, P. Radiuk, O. Melnychenko, O. Ishchuk, O. Savenko.
Radioelectronic and Computer Systems 2025(2), 2025. doi:10.32620/reks.2025.2.06
- J24 **Hierarchical Deep Learning Model for Identifying Similar Targets in UAV Imagery**
D. Borovyk[†], O. Barmak, P. Radiuk, I. Krak.
Drones 9(11):743, 2025. doi:10.3390/drones9110743 · PDF
- J23 **Method of adaptive knowledge distillation from multi-teacher to student deep learning models**
O. Chaban[†], E. Manziuk, P. Radiuk.
Journal of Edge Computing 4(2), pp. 159–178, 2025. doi:10.55056/jec.978 · PDF
- J22 **Method of UAV-based inspection of photovoltaic modules using thermal and RGB data fusion**
A. Lysyi, A. Sachenko, P. Radiuk, O. Melnychenko, D. Zahorodnia.
Radioelectronic and Computer Systems 2025(4), pp. 186–205, 2025. doi:10.32620/reks.2025.4.13
- J21 **Thermal and RGB Images Work Better Together in Wind Turbine Damage Detection**
S. Svystun[†], O. Melnychenko, P. Radiuk, O. Savenko, A. Sachenko, A. Lysyi.
International Journal of Computing pp. 526–535, 2025. doi:10.47839/ijc.23.4.3752
- J20 **Towards Transparent AI in Medicine: ECG-Based Arrhythmia Detection with Explainable Deep Learning**
O. Kovalchuk[†], O. Barmak, P. Radiuk, L. Klymenko, I. Krak.
Technologies 13(1):34, 2025. doi:10.3390/technologies13010034 · PDF
- J19 **Unsupervised Knowledge Extraction of Distinctive Landmarks from Earth Imagery Using Deep Feature Outliers for Robust UAV Geo-Localization**
Z. Ostrovskyi[†], O. Barmak, P. Radiuk, I. Krak.
Machine Learning and Knowledge Extraction 7(3):81, 2025. doi:10.3390/make7030081 · PDF
- J18 **Explainable Deep Learning: A Visual Analytics Approach with Transition Matrices**
P. Radiuk, O. Barmak, E. Manziuk, I. Krak.
Mathematics 12(7):1024, 2024. doi:10.3390/math12071024 · PDF · Code
- J17 **Intelligent Integrated System for Fruit Detection Using Multi-UAV Imaging and Deep Learning**
O. Melnychenko, L. Scislo, O. Savenko, A. Sachenko, P. Radiuk.
Sensors 24(6):1913, 2024. doi:10.3390/s24061913 · PDF
- J16 **Toward explainable deep learning in healthcare through transition matrix and user-friendly features**
O. Barmak, I. Krak, S. Yakovlev, E. Manziuk, P. Radiuk, V. Kuznetsov.
Frontiers in Artificial Intelligence 7:1482141, 2024. doi:10.3389/frai.2024.1482141 · PDF

- J15 **Facial Emotion Recognition for Photo and Video Surveillance Based on Machine Learning and Visual Analytics**
O. Kalyta[†], O. Barmak, P. Radiuk, I. Krak.
Applied Sciences 13(17):9890, 2023. doi:10.3390/app13179890 · PDF
- J14 **Information system for public places and institutions visualization with opportunities of inclusive access and optimal routing**
O. Pavlova, P. Radiuk, S. Kravchuk, V. Kulbachnyi.
Computer systems and information technologies No. 1, pp. 62–68, 2022. doi:10.31891/CSIT-2022-1-8
- J13 **Semantic alignment of ontologies meaningful categories with the generalization of descriptive structures**
E. Manziuk, O. Barmak, I. Krak, O. Pasichnyk, P. Radiuk, O. Mazurets.
PROBLEMS IN PROGRAMMING No. 3-4, pp. 355–363, 2022. doi:10.15407/pp2022.03-04.355
- J12 **An Approach to Early Diagnosis of Pneumonia on Individual Radiographs based on the CNN Information Technology**
P. Radiuk, O. Barmak, I. Krak.
The Open Bioinformatics Journal 14(1), pp. 93–107, 2021. doi:10.2174/1875036202114010093 · PDF · Code
- J11 **Applying mental models to making controlled critically safe decisions in IT project management**
P. Radiuk, T. Skrypnyk, D. Karlechuk.
Herald of Khmelnytskyi National University 301(5), pp. 32–35, 2021. doi:10.31891/2307-5732-2021-301-5-32-35
- J10 **Approaches to practical analysis of computing algorithms**
O. Barmak, P. Radiuk, M. Molchanova, O. Sobko.
Herald of Khmelnytskyi National University. Technical Sciences 303(6), pp. 102–105, 2021 (in Ukrainian). doi:10.31891/2307-5732-2021-303-6-102-105
- J9 **Information technology for early diagnosis of pneumonia using convolutional neural networks**
P. Radiuk, O. Barmak, I. Krak.
Problems of Control and Informatics 66(3), pp. 101–114, 2021 (in Ukrainian). doi:10.34229/1028-0979-2021-3-9 · PDF
- J8 **Information technology of visual analysis of X-ray images for interpretation of pneumonia diagnostic results**
O. Barmak, P. Radiuk.
Herald of Khmelnytskyi National University. Technical Sciences 295(2), pp. 52–55, 2021 (in Ukrainian). doi:10.31891/2307-5732-2021-295-2-52-55
- J7 **Intelligent data analysis using artificial neural networks for decision making in the education domain**
P. Radiuk, O. Mazurets, T. Skrypnyk, O. Moroz.
Herald of Khmelnytskyi National University 303(6), pp. 111–114, 2021. doi:10.31891/2307-5732-2021-303-6-111-114
- J6 **Web-based information technology for classifying and interpreting early pneumonia based on fine-tuned convolutional neural network**
P. Radiuk, O. Barmak.
Computer systems and information technologies No. 1, pp. 12–18, 2021. doi:10.31891/CSIT-2021-3-2
- J5 **An approach to accelerating convolutional neural network training by tuning training hyperparameters**
P. Radiuk.
Computer Systems and Information Technologies 2(2), pp. 32–37, 2020 (in Ukrainian). doi:10.31891/CSIT-2020-2-5
- J4 **Application of a genetic algorithm to search for the optimal convolutional neural network architecture with weight distribution**
P. Radiuk.
Herald of Khmelnytskyi National University. Technical sciences 281(1), pp. 7–11, 2020. doi:10.31891/2307-5732-2020-281-1-7-11
- J3 **Applying 3D U-Net Architecture to the Task of Multi-Organ Segmentation in Computed Tomography**
P. Radiuk.
Applied Computer Systems 25(1), pp. 43–50, 2020. doi:10.2478/acss-2020-0005
- J2 **Neuroevolution of convolutional neural networks for the classification of lung cancer images**
P. Radiuk.
Herald of Khmelnytskyi National University. Technical Sciences 267(6(2)), pp. 188–192, 2018.
- J1 **Impact of Training Set Batch Size on the Performance of Convolutional Neural Networks for Diverse Datasets**
P. Radiuk.
Information Technology and Management Science 20(1), 2017. doi:10.1515/itms-2017-0003

- C34 **Intelligent information system for knowledge integration into artificial intelligence models**
O. Chaban[†], E. Manziuk, P. Radiuk, E. Zaitseva, O. Markevych.
International Workshop on Advanced Applied Information Technologies: AI & DSS 2025, CEUR Workshop Proceedings 4163, pp. 145–161, 2026. [ceur-ws.org](#) · [PDF](#)
- C33 **AI-Driven Traffic Signal Control System to Reduce CO2 Emissions**
O. Ryzhanskyi[†], V. Pavlyshyn[†], P. Radiuk, E. Manziuk, O. Barmak, I. Krak.
YAISD Workshops 2025, CEUR Workshop Proceedings 3974, pp. 18–27, 2025. [ceur-ws.org](#) · [PDF](#)
- C32 **Determining the criticality assessment of defects on wind turbine components detected by UAV sensors**
S. Svystun[†], O. Melnychenko, P. Radiuk, A. Lysyi, A. Sachenko.
Intelligent Information Technologies & Systems of Information Security 2025 Proceedings of the The 6th International Workshop on Intelligent Information Technologies & Systems of Information Security (IntelIT-SIS 2025) Khmelnytskyi, Ukraine, April 4, 2025, CEUR Workshop Proceedings 3963, pp. 351–362, 2025. [ceur-ws.org](#) · [PDF](#)
- C31 **Distributed intelligent system architecture for UAV-Assisted monitoring of wind energy infrastructure**
S. Svystun[†], O. Melnychenko, P. Radiuk, O. Savenko, A. Lysyi.
The 1st International Workshop on Advanced Applied Information Technologies, CEUR Workshop Proceedings 3899, pp. 150–161, 2025. [ceur-ws.org](#) · [PDF](#)
- C30 **EMTKD at the edge: An adaptive multi-teacher knowledge distillation for robust cardiac MRI classification**
O. Chaban[†], E. Manziuk, O. Markevych, S. Petrovskyi, P. Radiuk.
5th Edge Computing Workshop, CEUR Workshop Proceedings 3943, pp. 42–57, 2025. [ceur-ws.org](#) · [PDF](#)
- C29 **Establishing Patterns of the Urban Transport Flows on Clustering Analysis**
V. Pavlyshyn[†], O. Ryzhanskyi[†], E. Manziuk, P. Radiuk, O. Barmak, I. Krak.
YAISD Workshops 2025, CEUR Workshop Proceedings 3974, pp. 1–9, 2025. [ceur-ws.org](#) · [PDF](#)
- C28 **Feature Computation Procedure for Fake News Detection: An LLM-Based Extraction Approach**
A. Shupta[†], P. Radiuk, I. Krak.
Intelligent Information Technologies & Systems of Information Security 2025 Proceedings of the The 6th International Workshop on Intelligent Information Technologies & Systems of Information Security (IntelIT-SIS 2025) Khmelnytskyi, Ukraine, April 4, 2025, CEUR Workshop Proceedings 3963, pp. 112–124, 2025. [ceur-ws.org](#) · [PDF](#)
- C27 **Multi-stage Segmentation and Cascade Classification Methods for Improving Cardiac MRI Analysis**
V. Slobodzian[†], P. Radiuk, O. Barmak, I. Krak.
Information Technology and Implementation 2024, CEUR Workshop Proceedings 3909, pp. 84–98, 2025. [ceur-ws.org](#) · [PDF](#)
- C26 **Verifiable by construction: Evidence-anchored LLMs for explainable fake news detection**
A. Shupta[†], P. Radiuk, M. Kvassay, P. Gaj.
Advanced AI in Explainability and Ethics for the Sustainable Development Goals, CEUR Workshop Proceedings 4141, pp. 168–182, 2025. [ceur-ws.org](#) · [PDF](#)
- C25 **YOLO Ensemble for UAV-based Multispectral Defect Detection in Wind Turbine Components**
S. Svystun[†], P. Radiuk, O. Melnychenko, O. Savenko, A. Sachenko.
2025 IEEE 13th International Conference on Intelligent Data Acquisition and Advanced Computing Systems: Technology and Applications (IDAACS), pp. 11–16, 2025. [doi:10.1109/IDAACS68557.2025.11322062](#)
- C24 **Dynamic Trajectory Adaptation for Efficient UAV Inspections of Wind Energy Units**
S. Svystun[†], O. Melnychenko, P. Radiuk, O. Savenko, A. Sachenko, A. Lysyi.
2024 14th International Conference on Dependable Systems, Services and Technologies (DESSERT), pp. 1–7, 2024. [doi:10.1109/DESSERT65323.2024.11122243](#)
- C23 **ECG Arrhythmia Classification and Interpretation using Convolutional Networks for Intelligent IoT Healthcare System**
O. Kovalchuk[†], O. Barmak, P. Radiuk, I. Krak.
Intelligent & CyberPhysical Systems 2024, CEUR Workshop Proceedings 3736, pp. 47–62, 2024. [ceur-ws.org](#) · [PDF](#)
- C22 **Explainable Artificial Intelligence: Transitioning DL Model Decisions to User-Understandable Features in Healthcare**
P. Radiuk, O. Barmak, E. Manziuk, I. Krak.
4th International Workshop of IT-professionals on Artificial Intelligence 2024, CEUR Workshop Proceedings 3777, pp. 185–199, 2024. [ceur-ws.org](#) · [PDF](#)

- C21 **Integration of Contextual Descriptors in Ontology Alignment for Enrichment of Semantic Correspondence**
E. Manziuk, O. Barmak, P. Radiuk, V. Kuznetsov, I. Krak, S. Yakovlev.
2024 14th International Conference on Dependable Systems, Services and Technologies (DESSERT), pp. 1–7, 2024. doi:10.1109/DESSERT65323.2024.11122179
- C20 **Interpretable deep learning method for medical image diagnosis**
E. Manziuk, O. Barmak, I. Krak, N. Petliak, Z. Jin, P. Radiuk.
Proceedings of the International Scientific Conference Intellectual Systems of Decision Making and Problems of Computational Intelligence (ISDMCI'2024), pp. 26–28, 2024.
- C19 **Myocardium Segmentation using Two-Step Deep Learning with Smoothed Masks by Gaussian Blur**
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- B2 **Explainable Deep Learning for Interpretable Brain Tumor Diagnosis from MRI Images**
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- P2 **CLARA: Cross-View Landmark Acquisition, Retrieval, and Anchoring as an Edge-Deployed Visual Trigger for Loosely Coupled UAV Navigation**
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Certificate No. 141364, computer program; with O. Chaban and E. Manziuk.
- 2025 **Guidelines for Laboratory Work in Numerical Methods**
Certificate No. 131688, methodological work; with N. Hrypynska.
- 2025 **Data Mining Methods in Information Technologies**
Certificate No. 131692, methodological work; with N. Hrypynska.
- 2025 **ECG Arrhythmia Classification with Subsequent Interpretation of Results**
Certificate No. 132579, computer program; with O. Kovalchuk and O. Barmak.
- 2025 **MRI Pathology Classification with Subsequent Interpretation of Results**
Certificate No. 133517, computer program; with V. Slobodzian and O. Barmak.
- 2025 **UAV Cyber-Physical System for Wind Turbine Defect Detection**
Certificate No. 134889, computer program; with S. Svystun, O. Savenko and O. Melnychenko.
- 2022 **Information System of Alternative Communication for Contactless Text Input Using a Limited Number of Simple Movements**
Certificate No. 109262, scientific work; with R. Bahrii, O. Barmak, O. Mazurets, E. Manziuk, M. Molchanova and O. Sobko.
- 2022 **Information Technology for the Early Diagnosis of Lung Diseases by a Mental-Formal Neural Network Model**
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- 2022 **Information System for the Visual Presentation and Explanation of Lung Disease Identification Results from Medical Chest Images**
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🎤 Presentations

Papers and project results presented at conferences and meetings.

- Sep 2026 Information Control Systems and Technologies (ICST-ODESA 2026), Odesa, Ukraine.
Auditing deep learning for cardiac MRI through semantic transitions and conflict-aware production rules
- Sep 2026 U_CAN Scenario Stress-Testing Workshop, TU Dresden (U_CAN Dresden 2026), Dresden, Germany.
Khmelnytskyi National University input on the Khmelnytskyi adaptive-traffic pilot
- Jul 2026 U_CAN consortium meeting (U_CAN L'Aquila 2026), L'Aquila, Italy.
Work package 4 status presentation
- Apr 2026 International conference "Reducing CO₂ Emissions in Ukrainian Cities: Pathways to Climate Neutrality" (Horizon Europe U_CAN) (U_CAN conference 2026), Khmelnytskyi, Ukraine.
Lead organiser and speaker
- Dec 2025 2nd International Workshop on Advanced Applied Information Technologies: AI & DSS (AdvAIT 2025), Khmelnytskyi, Ukraine.
Intelligent information system for knowledge integration into artificial intelligence models
- Nov 2025 1st Workshop on Advanced AI in Explainability and Ethics for the Sustainable Development Goals (ExplAI-2025), Khmelnytskyi, Ukraine.
Verifiable by construction: Evidence-anchored LLMs for explainable fake news detection
- Sep 2025 13th IEEE International Conference on Intelligent Data Acquisition and Advanced Computing Systems: Technology and Applications (IDAACS 2025), Gliwice, Poland.
YOLO ensemble for UAV-based multispectral defect detection in wind turbine components
- May 2025 Joint workshops AI for Environmental and Social Sustainability and AI and Interdisciplinary Innovations for Sustainable Development (YAISD-WS 2025), Ternopil, Ukraine.
Establishing patterns of the urban transport flows on clustering analysis
- May 2025 Joint workshops AI for Environmental and Social Sustainability and AI and Interdisciplinary Innovations for Sustainable Development (YAISD-WS 2025), Ternopil, Ukraine.
AI-driven traffic signal control system to reduce CO₂ emissions
- Apr 2025 5th Edge Computing Workshop (doors 2025), Zhytomyr, Ukraine.
EMTKD at the edge: An adaptive multi-teacher knowledge distillation for robust cardiac MRI classification

- Apr 2025 6th International Workshop on Intelligent Information Technologies & Systems of Information Security (IntelITSIS 2025), Khmelnytskyi, Ukraine.
Feature computation procedure for fake news detection: An LLM-based extraction approach
- Apr 2025 6th International Workshop on Intelligent Information Technologies & Systems of Information Security (IntelITSIS 2025), Khmelnytskyi, Ukraine.
Determining the criticality assessment of defects on wind turbine components detected by UAV sensors
- Dec 2024 1st International Workshop on Advanced Applied Information Technologies (AdvAIT 2024), Khmelnytskyi, Ukraine.
Distributed intelligent system architecture for UAV-assisted monitoring of wind energy infrastructure
- Nov 2024 XI International Scientific Conference “Information Technology and Implementation” (IT&I 2024), Kyiv, Ukraine.
Multi-stage segmentation and cascade classification methods for improving cardiac MRI analysis
- Oct 2024 14th International Conference on Dependable Systems, Services and Technologies (DESSERT 2024), Athens, Greece.
Integration of contextual descriptors in ontology alignment for enrichment of semantic correspondence
- Oct 2024 14th International Conference on Dependable Systems, Services and Technologies (DESSERT 2024), Athens, Greece.
Dynamic trajectory adaptation for efficient UAV inspections of wind energy units
- Sep 2024 4th International Workshop of IT-professionals on Artificial Intelligence (ProfIT AI 2024), Cambridge, MA, United States.
Representation of trustworthiness components in AI systems: A formalized approach considering interconnections and overlap
- Sep 2024 4th International Workshop of IT-professionals on Artificial Intelligence (ProfIT AI 2024), Cambridge, MA, United States.
Explainable artificial intelligence: Transitioning DL model decisions to user-understandable features in healthcare
- Jun 2024 1st International Workshop on Intelligent & CyberPhysical Systems (ICyberPhyS 2024), Khmelnytskyi, Ukraine.
ECG arrhythmia classification and interpretation using convolutional networks for intelligent IoT healthcare system
- Jun 2024 1st International Workshop on Intelligent & CyberPhysical Systems (ICyberPhyS 2024), Khmelnytskyi, Ukraine.
Precision slicing for enhanced defect detection in high-resolution wind turbine blade imagery
- 2024 International Scientific Conference Intellectual Systems of Decision Making and Problems of Computational Intelligence (ISDMCI 2024), Khmelnytskyi, Ukraine.
Interpretable deep learning method for medical image diagnosis
- Nov 2023 6th International Conference on Informatics & Data-Driven Medicine (IDDM 2023), Bratislava, Slovakia.
Robust R-peak detection using deep learning based on integrating domain knowledge
- Nov 2023 6th International Conference on Informatics & Data-Driven Medicine (IDDM 2023), Bratislava, Slovakia.
Myocardium segmentation using two-step deep learning with smoothed masks by Gaussian blur
- Sep 2023 12th IEEE International Conference on Intelligent Data Acquisition and Advanced Computing Systems: Technology and Applications (IDAACS 2023), Dortmund, Germany.
Apple detection with occlusions using modified YOLOv5-v1
- Mar 2023 4th International Workshop on Intelligent Information Technologies & Systems of Information Security (IntelITSIS 2023), Khmelnytskyi, Ukraine.
A novel feature vector for ECG classification using deep learning
- Nov 2022 5th International Conference on Informatics & Data-Driven Medicine (IDDM 2022), Lyon, France.
Human-in-the-loop approach based on MRI and ECG for healthcare diagnosis
- May 2022 6th International Conference on Computational Linguistics and Intelligent Systems (COLINS 2022), Gliwice, Poland.
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Method of facial geometric feature representation for information security systems

- Mar 2022 3rd International Workshop on Intelligent Information Technologies & Systems of Information Security (IntelITSIS 2022), Khmelnytskyi, Ukraine.
Convolutional neural network for parking slots detection
- Mar 2021 2nd International Workshop on Intelligent Information Technologies & Systems of Information Security (IntelITSIS 2021), Khmelnytskyi, Ukraine.
Detection of early pneumonia on individual CT scans with dilated convolutions
- 2021 XIII All-Ukrainian Scientific and Practical Conference “Actual Problems of Computer Science” (APKN-2021), Khmelnytskyi, Ukraine.
A mental model approach for making decisions in IT project management
- Nov 2020 VI International Scientific and Practical Conference “Computer Modeling and Optimization of Complex Systems” (CMOCS-2020), Dnipro, Ukraine.
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- Jun 2020 IX International Scientific and Practical Conference (Kherson 2020), Kherson, Ukraine.
Search space for the neural network architecture optimization problem
- Apr 2020 VIII All-Ukrainian Scientific and Practical Conference on Automatic Control (Automatic Control 2020), Kherson, Ukraine.
A strategy for searching for the optimal convolutional neural network architecture
- Apr 2020 4th International Conference on Computational Linguistics and Intelligent Systems (COLINS 2020), Lviv, Ukraine.
A framework for exploring and modelling neural architecture search methods
- Apr 2019 V International Scientific and Practical Conference “Intelligent Solutions: Computational Intelligence” (Intelligent Solutions 2019), Uzhhorod, Ukraine.
Analysis of the application of neural network modelling methods for medical image processing