DZIEŃ DOBRY! HELLO — I'M MYROSLAV

New doctoral student • Explainable AI for Industrial Logistics (AGVs)

Myroslav **Mishchuk**

Prepared for: Department of Distributed Systems and Informatic Devices

Politechnika Śląska

MSCA

Marie Skłodowska-Curie Actions

ABOUT ME (KILKA SŁÓW O MNIE) 📝

- From Lviv, Ukraine (Львів) → now in Silesia (Gliwice/Katowice)
- Background: software engineer of medical devices+ research in Signal processing and Human Activity Recognition & Analysis
- Motivation: technology and innovation for people
- Goal: bridge academia and industry for safer, more transparent automation
- Polish slowly improving — proszę o wyrozumiałość 🥲

LVIV (ЛЬВІВ): CITY OF LIONS • KAWA • HERITAGE 🦁

- Nickname: “City of Lions”; lion motifs across the city
- Founded 1256; Old Town is a UNESCO World Heritage Site
- Renowned coffee culture & cafés; annual tech/innovation events (e.g., IT Arena)
- Student city with rich arts and architecture — Rynek, opera, courtyards
- **Why it feels close to Silesia: industrious spirit, universities, friendly vibe**

LVIV ↔ GLIWICE: FEELS LIKE HOME (JAK W DOMU 🥰)

Gliwice

Lviv

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Lviv

LVIV ↔ GLIWICE: FEELS LIKE HOME (JAK W DOMU 🥰)

Gliwice

Lviv

EDUCATIONAL BACKGROUND 👨‍🎓

- **Politechnika Śląska | *PhD*,** **2025–now**

  Computer science / Department of Distributed Systems and Informatic Devices

- **Lviv Polytechnic National University | *PhD*,** **2025–now**

  Computer science / Institute of Computer Science and Information Technologies

- **Lviv Polytechnic National University | *MSc, Honors Diploma*** **2023–2024**

  Computer science / Institute of Computer Science and Information Technologies

- **Kingston University London | *ERASMUS programme*** **2021 – 2022**

  Computing / Faculty of Science, Engineering and Computing

- **Lviv Polytechnic National University | *BSc, Honors Diploma*** **2019 – 2023**

  Computer science / Institute of Computer Science and Information Technologies

PROFESSIONAL, ACADEMIC EXPERIENCE & EXPERTISE 👨‍💻

Work Experience:

- **Doctoral researcher |** ***TUAI project*** *about* **1 week** 😅
  Funded by the MSCA-DN Horizon Europe programme, conducting research in Explainable Artificial Intelligence, Large Language Models (LLMs), and Edge Computing.

- **Software Engineer |** ***GlobalLogic, Full-time*** *about* **3 years**
  Software development for an embedded Linux class C (high-risk) and B (medium-risk) medical devices.

  Main technologies: C/C++, Python, Qt/QML, Linux, Yocto.

- **Academic Assistant |** ***Lviv Polytechnic National University, Part-time*** *about* **1 year**
  Institute of Computer Science and Information Technologies,
  Department of Automated Control Systems.

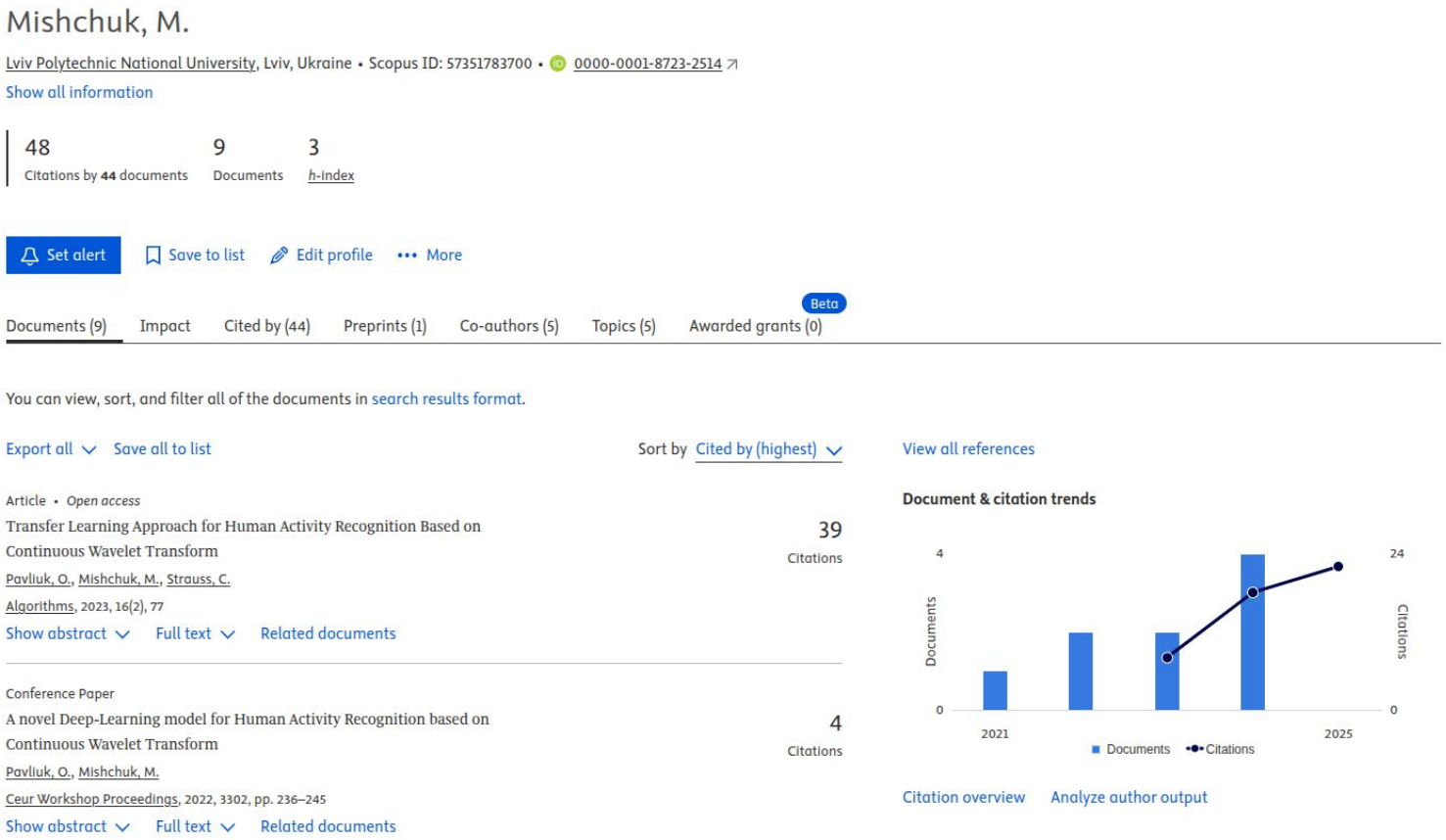
Technical Skills:

- **Languages:** Python, C/C++, Kotlin, SQL
- **Libraries and technologies:** Tensorflow, Keras, Qt, Docker, Microsoft Azure, Google Cloud, Git
- **Additional:** Artificial Intelligence, Machine learning, Data analysis, Neural networks, Linux, Networking, Microcontroller programming (AVR, ESP), Digital electronics and schematics

RESEARCH & SCIENTIFIC CONTRIBUTIONS 🧪

Research Domains:

- Human Activity Recognition (HAR)
- Biomedical Signal Processing
- Industry 4.0, 5.0
- Machine Learning & Neural Networks



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Article • Open access

Transfer Learning Approach for Human Activity Recognition Based on Continuous Wavelet Transform

Pavliuk, O., Mishchuk, M., Strauss, C.

Algorithms, 2023, 16(2), 77

39 Citations

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Conference Paper

A novel Deep-Learning model for Human Activity Recognition based on Continuous Wavelet Transform

Pavliuk, O., Mishchuk, M.

Ceur Workshop Proceedings, 2022, 3302, pp. 236–245

4 Citations

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Document & citation trends

Citation overview | Analyze author output

RESEARCH & SCIENTIFIC CONTRIBUTIONS 🧪

- About **30 research papers** have been published**.**
- **9** indexed in **Scopus and Web of Science.**
- h-index = **3** (Scopus)

The main publications:

- O. Pavliuk, M. Mishchuk. 2024. “Smartwatch-Based Human Staff Activity Classification: A Use-Case Study in Internal Logistics Systems Utilizing AGVs” IEEE International Conference on Big Data (**IEEE BigData 2024**).
- O. Pavliuk, M. Medykovskyy, R. Cupek, M. Mishchuk. 2024. “Modern methods of data preprocessing to increase the accuracy of AGV battery discharge forecast”. IEEE 19th International Conference on Computer Science and Information Technologies **(CSIT 2024)**.
- M. Mishchuk, O. Pavliuk, M. Medykovskyy. 2024. “Approach for Smartwatch-Based Complex Human Activity Recognition in Internal Logistics Systems”. IEEE 19th International Conference on Computer Science and Information Technologies **(CSIT 2024)**.
- O. Pavliuk, M. Mishchuk, M. Medykovskyy, R. Cupek. 2024. “A two-stage feature selection method for neural network predictive models for AGV,” 1st International Conference on Smart Automation & Robotics for Future Industry 2024 **(SMARTINDUSTRY 2024)**, Lviv, Ukraine. https://ceur-ws.org/Vol-3699/paper9.pdf
- Pavliuk, O., Mishchuk, M., & Strauss, C. (2023). Transfer learning approach for human activity recognition based on continuous wavelet transform. ***Algorithms*, *16*(2)**. https://doi.org/10.3390/a16020077 (***Q2***)
- M. Medykovskyy, R. Cupek, O. Pavliuk, M. Mishchuk. 2023. "An approach towards AGV battery cell voltage prediction using DL and data pre-processing," 2023 IEEE 18th International Conference on Computer Science and Information Technologies **(CSIT 2023)**, Lviv, Ukraine. https://doi.org/10.1109/CSIT61576.2023.10324170
- O. Pavliuk, M. Mishchuk. 2022. "A novel Deep-Learning model for Human Activity Recognition based on Continuous Wavelet Transform," 5th International Conference on Informatics and Data-Driven Medicine **(IDDM 2022)**, Lyon, France, pp. 236-245, https://www.scopus.com/record/display.uri?eid=2-s2.0-85144238728&origin=resultslist

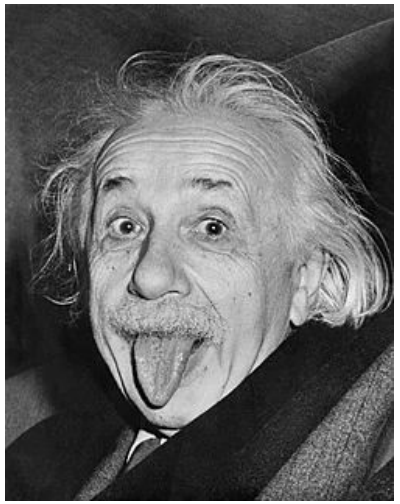
HOBBIES & INTERESTS (ZAINTERESOWANIA) 🎸

- Freudian psychoanalysis (psychology of error & interpretation)
- Robotics and embedded systems
- Music, guitar
- Gym, sketching/drawing, Japanese culture
- Philosophy & Buddhism
- Learning Polish — małymi krokami do przodu 🙂

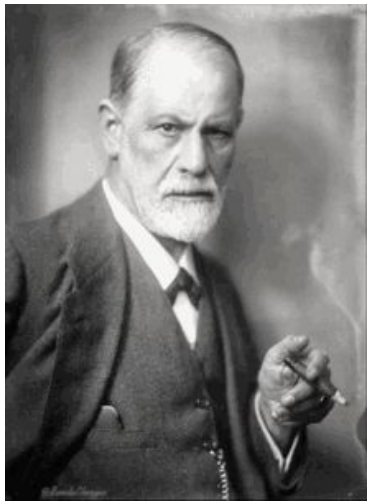
CLARITY FIRST: FROM A GOOD EXPLANATION TO GOOD AI

My rule as a researcher: explanations before models

"If you can't explain it simply — you don't understand it well enough."



Explained the universe ✨



Explained why researchers' libido is redirected on coffee machines ☕😉

This leads us to XAI...

DOCTORAL RESEARCH (KIERUNKI BADAŃ) 💡

“Explainable Artificial Intelligence for internal logistics systems in green manufacturing”

PhD Supervisor: prof. Rafał Cupek

- Explainable AI (XAI) for internal logistics and AGVs
- Transparent, auditable decisions → safety, compliance, efficiency
- From black-box to glass-box: understand why, not only what
- Open to collaboration (Zapraszam do współpracy)

Dziękuję! (Thank you)

Chętnie pomogę i chętnie poproszę o pomoc — let's collaborate!

Politechnika Śląska

MSCA

Marie Skłodowska-Curie Actions

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- **Google Scholar:** https://scholar.google.com/citations?**user=qV8QlosAAAAJ**
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