Pavlo Melnyk

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Education

PhD in Electrical Engineering with a specialization in Computer Vision *Linköping, Sweden*
Computer Vision Laboratory, Linköping University *Aug 2019 – Sept 2024*

- Specialization includes Machine Learning and Geometric Deep Learning
- Funded by Wallenberg AI, Autonomous Systems and Software Program (WASP)
- Under the supervision of Michael Felsberg at the Computer Vision Laboratory and WASP Graduate School
- 5-year degree with 30% of coursework (90 ECTS) and 20% of teaching and other academic duties
- Thesis "Spherical NeurO(n)s for Geometric Deep Learning"

MEng in Computer Science and Technology *Changsha, China*
Hunan University *Sept 2016 – June 2019*

- Master's thesis "Deep Learning for Offline Handwritten Chinese Character Recognition"

BEng in Information Security Systems (Electrical Engineering) *Pokrovsk, Ukraine*
Donetsk National Technical University *Sept 2012 – June 2016*

Experience

Postdoctoral Researcher *Linköping, Sweden*
Computer Vision Laboratory, Linköping University *Feb 2025 -*

- Research on geometry, including applications for materials science and human pose estimation

Researcher in a Materials Science Project *Linköping, Sweden*
Linköping University *Feb 2024 - Feb 2025*

- WASP-WISE AI4Science collaborative project with Mårten Wadenbäck and Jonas Björk as PIs
- Developed an equivariant ML framework to be combined with DFT in a holistic approach enabling exploration of a broad range of materials and catalytic processes, resulting in the CataLiUst initiative

Co-Founder, Co-Director *London, UK*
Demine Foundation deminefoundation.com *Jan 2023 -*

- Not-for-profit organization developing ML-assisted drone-based humanitarian demining tools
- Part of the ML team; assisting in the development and data collection; managing international connections

Co-Founder, Board Member *Linköping, Sweden*
Ukrainska Föreningen Östergötland (Regional Ukrainian Association) ukrfo.se *Mar 2022 -*

- **Chairman** *2023 - 2025*
- Association was awarded Vitsipps Prize 2023 for extraordinary civic efforts in Linköping Municipality

Teaching Assistant, Supervisor of Master's Theses *Linköping, Sweden*
Computer Vision Laboratory, Linköping University *Aug 2019 -*

- **1300+ hours of teaching** conducted in English and Swedish
- Laboratory exercises in Multidimensional Signal Analysis, Neural Networks and Deep Learning, and Computer Vision; lessons in Signal and Image Processing; projects in Computer Vision and Conceive-Design-Implement-Operate (CDIO)
- **20 Master's theses** conducted at companies such as Maxar, Saab, Qualcomm, Ericsson, Bosch, Wikipedia, RISE, SICK, FOI, Combitech, etc.

Doctoral Student *Linköping, Sweden*
Computer Vision Laboratory, Linköping University *Aug 2019 - Sept 2024*

Student Representative — *Changsha, China*
UNESCO Youth Forum — *May 2018*

Student Researcher — *Changsha, China*
Key Laboratory of Embedded and Network Computing of Hunan Province — *Dec 2016 – June 2019*

- Developed a SOTA CNN-based method for offline handwritten Chinese character recognition (3755 classes)

Awards & Honors

- Top reviewer at NeurIPS 2023 (top 10%, 1,197 of 11,725 reviewers) — *2023*
- Honorable mention in ICML Topological Deep Learning Challenge — *2023*
- WASP Doctoral student grant (5 years): collaborative project "How to Inject Geometry into Deep Learning" — *2019*
- Award by Ministry of Science and Education of Ukraine (3 years): recipient (1/50) of a Chinese Government Scholarship to pursue a Master's in China — *2016*
- Award by the Verkhovna Rada of Ukraine (1 year): recipient of a two-term stipend as recognition of excellent achievements in studies — *2014*

Reviewing Service

CVPR '22, '24, '26 NeurIPS '21, '23, '25 ICCV '25 ECCV '24 ICLR '24, '25 WACV '24 3DV '24

Technologies

- Currently using: Python, PyTorch, Git, LaTeX
- Other experience: MATLAB, C++ (fundamentals), TensorFlow, Keras, Theano
- Code samples: github.com/pavlo-melnyk

Languages

Ukrainian — Native
Swedish — C1 (advanced), certified in 2021
English — Full professional proficiency
Chinese — HSK5 (advanced), certified in 2019

Selected Publications

Equivariant Modelling for Catalysis on 2D MXenes — EurIPS 2025 Workshop on SIMBIOCHEM **spotlight**
Pavlo Melnyk*, Anmar Karmush*, Ania Beatriz Rodríguez-Barrera, Mårten Wadenbäck, Michael Felsberg, Johanna Rosen, Jonas Björk*

On Learning Deep O(n)-Equivariant Hyperspheres — ICML 2024
Pavlo Melnyk, Michael Felsberg, Mårten Wadenbäck, Andreas Robinson, Cuong Le

TetraSphere: A Neural Descriptor for O(3)-Invariant Point Cloud Analysis — CVPR 2024
Pavlo Melnyk, Andreas Robinson, Michael Felsberg, Mårten Wadenbäck

Steerable 3D Spherical Neurons — ICML 2022 **spotlight**
Pavlo Melnyk, Michael Felsberg, Mårten Wadenbäck

Embed Me If You Can: A Geometric Perceptron — ICCV 2021
Pavlo Melnyk, Michael Felsberg, Mårten Wadenbäck

A High-Performance CNN Method for Offline Handwritten Chinese Character Recognition and Visualization — Soft Computing 2020
Pavlo Melnyk, Zhiqiang You, Keqin Li

See all publications on Google Scholar