MAKSIM ZHDANOV

email · website · github · google scholar · twitter

research: scalable geometric deep learning, physics simulations in latent space

EDUCATION

PhD in Machine Learning 2023 – 2027
University of Amsterdam, AMLab
· Advisors: Max Welling & Jan-Willem van de Meent

MSc in Computer Science 2019 – 2022
TU Dresden
· GPA: 1.4 (excellent)
· Thesis: analyzing brain connectivity with generative modelling

BSc in Physics 2015 – 2019
Saint Petersburg State University
· GPA: 4.8/5.0 (with honours)
· Thesis: simulating skin with molecular dynamics

TECHNICAL SKILLS

Code: Python, C++, MATLAB
ML: JAX + Flax (projects 1, 2, 3), PyTorch, HPC

PUBLICATIONS

Erwin: A Tree-based Hierarchical Transformer for Large-scale Physical Systems
Maksim Zhdanov, Max Welling, Jan-Willem van de Meent
ICML 2025 arxiv code blog

Clifford Steerable Convolutional Neural Networks
Maksim Zhdanov, David Ruhe, Maurice Weiler, Ana Lucic, Johannes Brandstetter, Patrick Forré
ICML 2024 arxiv code blog

Implicit Convolutional Kernels for Steerable CNNs
Maksim Zhdanov, Nico Hoffmann, Gabriele Cesa
NeurIPS 2023 arxiv code blog

Investigating Brain Connectivity with Graph Neural Networks and GNNExplainer
Maksim Zhdanov, Saskia Steinmann, Nico Hoffmann
ICPR 2022 (Oral) arxiv code

AdS-GNN – a Conformally Equivariant Graph Neural Network
Maksim Zhdanov, Nabil Iqbal, Erik Bekkers, Patrick Forré
ICLR 2025 MLMP workshop arxiv code

BSA: Ball Sparse Attention for Large-scale Geometries
Catalin E. Brita, Hieu Nguyen, Lohithsai Yadala Chanchu, Domonkos Nagy, Maksim Zhdanov
ICML 2025 LCFM workshop arxiv code

WORK EXPERIENCE

Research Assistant Apr 2022 – Apr 2023
Helmholtz AI, Dresden

· generative modeling approaches for experimental physics data (workshop paper)

Research Student Sep 2020 – Apr 2022
Helmholtz AI, Dresden

· representation learning to study schizophrenia (workshop paper)
· neural network-based solver for PDEs and inverse problems (repo)

Research Student May 2020 – Dec 2020
TU Dresden

· data analysis of clinical treatment of leukaemia