# MAKSIM ZHDANOV | Curriculum Vitae

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## Research interests

- **Geometric Deep Learning**: Equivariant Deep Learning; Clifford Deep Learning.
- **Generative Modeling**: geometric latent space models, learning on non-Euclidean domains.
- **AI4Science**: physics simulations, PDE modeling, physics-inspired deep learning.

I also find causality and its intersection with category theory quite interesting.

## Experience

**RESEARCH ASSISTANT** — 04/2022 - ongoing
Helmholtz AI @ Helmholtz-Zentrum Dresden-Rossendorf

**STUDENT ASSISTANT** — 09/2020 - 03/2022
Helmholtz AI @ Helmholtz-Zentrum Dresden-Rossendorf

**STUDENT ASSISTANT** — 05/2020 - 12/2020
The Institute for Medical Informatics and Biometry

## Education

**TU DRESDEN** — 10/2019 - 3/2022
M.Sc. in Computer Science, GPA: 1.4. — Dresden, Germany
Major: Machine Learning for Life sciences

**SAINT PETERSBURG STATE UNIVERSITY** — 9/2015 - 7/2019
B.Sc. in Physics, GPA: 1.2, with honours. — Saint Petersburg, Russia
Major: Molecular Biophysics

## Conference proceedings

- **Zhdanov, M.**, Steinmann, S., & Hoffmann, N. (2022). Investigating Brain Connectivity with Graph Neural Networks and GNNExplainer, ICPR 2022 (Oral).

## Workshop contributions

- **Zhdanov, M.**, Steinmann, S., & Hoffmann, N. (2022). Learning Generative Factors of EEG Data with Variational auto-encoders, Deep Generative Models workshop @ MICCAI (Oral).

## Other publications & preprints

- **Zhdanov, M.**, Hoffmann, N. & Cesa, G. (2022). Implicit Neural Filters for Steerable CNNs (in progress)
- **Zhdanov, M.**, Randolph, L., Kluge, T., Motoaki, N., Gutt, C., Ganeva, M. & Hoffmann, N. (2022). Amortized Bayesian Inference of GISAXS Data with Normalizing Flows
- **Zhdanov, M.** (2022). Analyzing Generative Factors of Functional Connectivity with Variational Autoencoders, Master thesis.

## Selected projects

- Implicit neural filters for steerable CNNs with application to point cloud data (in progress).
- Simulation-based inference for inverse scattering problems.
- Disentangled representation learning with graph VAEs for neuroimaging problems.
- Learning PDE from thermoimaging data with physics-informed NNs.

## Skills

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|---|---|
| **PROGRAMMING LANGUAGE** | Python \| C++ \| R |
| **FRAMEWORKS & TOOLS** | Git \| GROMACS \| AutoDock Vina |
| **LIBRARIES** | PyTorch \| escnn \| PyTorch Geometric \| NumPy \| Pandas |
| **CONTRIBUTED TO** | Neural Solvers |
| **LANGUAGES** | **Native:** Russian \| **Fluent:** English \| **Intermediate:** German |

## Community service

**MACHINE LEARNING AND THE PHYSICAL SCIENCES WORKSHOP @ NEURIPS 2022** — 09/2022
reviewer — online, USA

**SYMMETRY AND GEOMETRY IN NEURAL REPRESENTATIONS WORKSHOP @ NEURIPS 2022** — 09/2022
reviewer — online, USA

**ICPR 2022** — 05/2022
reviewer — online, Canada

## Extracurricular activities

**SNI 2022 CONFERENCE** — 09/2022
poster presentation — Berlin, Germany

**LONDON GEOMETRY AND MACHINE LEARNING SUMMER SCHOOL** — 07/2022
poster presentation + project — online, UK

**SWISS EQUIVARIANT WORKSHOP** — 07/2022
participant — Lausanne, Switzerland

**MACHINE LEARNING SUMMER SCHOOL** — 07/2022
poster presentation — Krakow, Poland

**HZDR MACHINE LEARNING JOURNAL CLUB** — 09/2020 - ongoing
active participant — Dresden, Germany

**HELMHOLTZ AI CONFERENCE** — 06/2022
poster presentation — Dresden, Germany

**INTERNATIONAL AI ARCHEOLOGY CHALLENGE** — 04/2022
3rd place — online, Israel

**5. WORKSHOP BIOINFORMATICS MEETS MACHINE LEARNING** — 12/2021
Talk: "Investigating Brain Connectivity with Graph Neural Networks and GNNExplainer" — online, Germany

**MACHINE LEARNING SUMMER SCHOOL** — 08/2021
participant — online, Taiwan

**CASUS WORKSHOP** — 09/2021
Talk: "Investigating Brain Connectivity with Graph Neural Networks and GNNExplainer" — Gorlitz, Germany

**HIDA COVID-DATA CHALLENGE**
participant

04/2021
online, Germany