Grigory Bartosh

Ph.D. Candidate Machin Learning
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RESEARCH

- Diffusion Models, Generative Models, Deep Learning

EDUCATION

- **University of Amsterdam** — Sep 2022 – Present
  - Pursuing a Ph.D. degree in Machine Learning
  - **Thesis**: Generalized Diffusion Probabilistic Models
  - **Supervisor**: [Christian A. Naesseth]()

- **St Petersburg Higher School of Economics** — Sep 2020 – Jun 2022
  - Master degree in Programming and Data Analysis
  - **Thesis**: Dimension Reducing Diffusion Models
  - **Supervisor**: [Dmitry Vetrov]()

- **St Petersburg Higher School of Economics** — Sep 2016 – Jun 2020
  - Bachelor degree in Mathematics and Computer Science
  - **Thesis**: Cross-Modal Retrieval with Partially Paired Data
  - **Supervisor**: [Alexei Shpilman]()

EXPERIENCE

- **[JetBrains Research]()** — Jul 2020 – Aug 2022
  - **Position**: Researcher
  - **Primary activity**: Semi-Supervised Text-Vision Cross-Modal Retrieval research. I also taught a Deep Unsupervised Learning course for graduate students as a lecturer. Additionally, three master's students under my supervision successfully defended their theses, each earning a grade 5/5.

- **[Yandex Self-Driving Car]()** — Jul 2019 – Sep 2019
  - **Position**: ML Engineer Intern
  - **Project**: Dynamic object recognition for Self-Driving Car (SDC). I implemented several neural network backbone architectures and optimization techniques for existed 3D object detection system, set up experiments and integrated model with the best performance into SDC pipeline. At the same speed, the IoU metric increased by $\sim 2.5\%$.

- **[Yandex]()** — Jul 2018 – Sep 2018
  - **Position**: Software Engineer Intern
  - **Project**: Predicting User Visits to Organizations Based on Historical Data: I implemented a basic model for predicting user visits and integrated it into the existing recommendation system pipeline. These predictions helped increase user conversions by $\sim 1.5\%$.

- **[Geoscan]()** — Mar 2018 – May 2018
  - **Position**: Software Engineer Intern
  - **Project**: 3D camera localization through point coordinates and projections. I integrated the solution to the camera localization issue into Geoscan's software, which became a new feature.

Selected Publications

- **Grigory Bartosh**, Dmitry Vetrov, and Christian A. Naesseth. "Neural Flow Diffusion Models: Learnable Forward Process for Improved Diffusion Modelling". NeurIPS 2024.

- Floor Eijkelboom*, **Grigory Bartosh***, Christian A. Naesseth, Max Welling, and Jan-Willem van de Meent. "Variational Flow Matching for Graph Generation". NeurIPS 2024.

- François RJ Cornet, **Grigory Bartosh**, Mikkel N. Schmidt, Christian A. Naesseth "Equivariant Neural Diffusion for Molecule Generation". NeurIPS 2024.

- **Grigory Bartosh**, Dmitry Vetrov, and Christian A. Naesseth. "Neural Diffusion Models". ICML 2024.

Teaching

- **Introduction to Machine Learning** (Undergraduate) 2022 – 2023
  Teaching assistant *University of Amsterdam*
- **Deep Unsupervised Learning** (Graduate) 2021 – 2022
  Lecturer *Higher School of Economics*
- **Supervised**: 4 M.Sc. students 2020 – Present

Honors and awards

- **All-Russian Olympiad in Informatics** Spring 2016
  Awardee diploma, **top** 13.6%

- **Open Moscow Olympiad in Informatics** Spring 2016
  1st grade diploma, **top** 5.8%

- **World Robot Olympiad** Autumn 2013
  Project "SummerGardenBot" (video): This is the model of a robotic complex to control the condition of statues. There are two robots: Guardian and Sentinel. Sentinel patrols the park, builds 3D models of the statues and monitors their condition. Guardian eliminates contamination in case of detection. I made systems of mapping and navigating.
  Result: **4th place** in the World Final, **1th place** at the All-Russian stage

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*Equal contribution.