Ivan Bulygin

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Education

Moscow Institute of Physics and Technology (MIPT) — Moscow
Bachelor of Applied Mathematics and Physics, GPA: 7.7/10 — *Sept. 2015 – May 2018*
- Developed computer-vision system for left ventricle and myocardium segmentation in MRI heart images

Skolkovo Institute of Science and Technology (Skoltech) — Moscow
Master of Mathematics and Computer Science, GPA: 4.7/5 — *Sept. 2018 – May 2020*
- Under Victor Lempitsky's supervision, I have been working on 3D Human Pose Estimation in video, using 3D Convolutional Neural Networks, spatio-temporal information extraction and various normalizations
- Maintained high-performance SLURM cluster for distributed CPU and GPU computation

Experience

Scientific Intern — Vienna
IST Austria — *October 2021 – January 2022*
- In Tim Vogels lab I was building a model for the representational drift phenomena in recurrent neural networks

Junior Research Engineer — Moscow
Skoltech, ADASE lab. — *September 2020 – Present*
- In collaboration with MSU Institute for Advanced Brain Studies I analyzed low-dimensional representation of the neural activity, captured by calcium imaging in CA1 area of mice hippocampus. I proposed several methods for neural activity pattern analysis, based on graphs kernels and graphs Laplacians to investigate spatial memory formation and demonstrated the topological connection between the stimuli and neural activity
- Experimented with Focal Cortical Dysplasia segmentation on MRI scans via convolutional neural networks
- Demonstrated absence of enterotypes in the human gut microbiomes: oral presentation at IHMC 2021, preprint

Teaching Assistant — Online
Neuromatch Academy — *July – August in 2020 and 2021*
- Conducted tutorials on different topics in Computational Neuroscience, Data Analysis and Artificial Intelligence

Seminarist — Moscow
Sberbank Corporate University — *October 2019 - October 2021*
- Conducted seminars on Data Analysis, Statistics and Machine Learning

Research Assistant — Moscow
Samsung AI Center — *June – September 2019*
- Improved model for single-view 3D Human Pose Estimation in video using spatio-temporal features extraction

Research Intern — Moscow
Samsung R&D Center, AI lab. — *June – September 2018*
- Developed accurate gesture recognition pipeline for human-robot interaction using neural networks

Projects

Generative Latent Optimization (GLO) | *optimization methods, probabilistic modeling*
- Implemented GLO model and its optimization process on PyTorch for video generation using Gaussian Processes

Dynamic Textures Synthesis | *deep learning, computer vision*
- Created 3D and 2D Convolutional Neural Networks for generating stable and consistent dynamic textures

Graph Curvature Networks for connectome classification | *graph neural networks, EEG, fMRI*
- Improved Convolutional Graph Network for connectomes classification with discretized Ricci Curvatures

Skills

Machine Learning, Deep Learning, Computer Vision, Reinforcement Learning, Dynamical Systems, Computational Neuroscience, Topological Data Analysis, Calculus, Bayesian Methods, Linear Algebra
Tools and Languages: git, bash, Linux, Python, C/C++, LaTeX
Libraries: pandas, NumPy, SciPy, Matplotlib, scikit-learn, Keras, PyTorch, TensorFlow, nilearn, pytorch-geometry, etc.