Aram Davtyan

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Education

2020-present **University of Bern**,
Computer Vision Group,
PhD in Computer Science.

2014-2020 **Lomonosov Moscow State University**,
Specialist degree (equivalent to BSc + MSc),
Faculty of Mechanics and Mathematics,
Department of Function Theory and Functional analysis.
GPA 4.98 (top 10 out of 250 students)

2016-2018 **Yandex School of Data Science**,
Diploma,,
Department of Data Analysis.

Winter and Summer Schools

2023 **International Computer Vision Summer School**,
Intense one-week summer school with more than 100 participants and lectures delivered by world renowned experts in the field of computer vision.

2020 **Winter school "Math of machine learning"**,
Four-day workshop consisting of 3 interdisciplinary mini-courses on theoretical foundations of machine learning and deep learning delivered by world-class scientists.

Job Experience

2019-2020 **Yandex**,
software engineer,
Developing the backend of a high-load service (Yandex.Navigator) responsible for building optimal routes in the automobile graph with respect to the realtime traffic.
implementing algorithms on road graphs, improving quality of the service via supervised and reinforcement learning techniques

2017-2021 **Inline group**,
resource center specialist,
Applying machine learning to various problems in oil industry.
collecting and preprocessing data, negotiating with the customers

Teaching Experience

2020-present **University of Bern**,
Teaching assistant of Machine Learning and Deep Learning courses.

2021 **Yandex School of Data Science**,
Conducted a seminar on Self-Supervised learning in Computer Vision.

2018-2021 **Yandex School of Data Science**,
Supervised a group of students in their research in statistical methods applied to the oil industry.

Research Experience

2020-present As a part of Computer Vision Group in the University of Bern doing research in unsupervised learning of object interactions in the videos under the supervision of Prof. Dr. Paolo Favaro

2018-2020 Research in spectral analysis of the operator in generalized 't Hooft model under the supervision of Prof. Dr. Sheipak I.A.

2017-2018 Thesis project "Optimization of oil production via construction of forecast models on injection wells operation modes" for Yandex School of Data Science under the supervision of Prof. Muchnik I.B.

Author and owner of the patent RU 2 701 761 C1 "Control method of oil production at mature separate oil deposit"

Publications

2023 Aram Davtyan and Paolo Favaro. Learn the Force We Can: Multi-Object Video Generation from Pixel-Level Interactions. `https://arxiv.org/abs/2306.03988`

2023 Aram Davtyan, Sepehr Sameni, Paolo Favaro. Efficient Video Prediction via Sparsely Conditioned Flow Matching. In International Conference on Computer Vision. `https://arxiv.org/abs/2211.14575`

2022 Aram Davtyan and Paolo Favaro. Controllable Video Generation through Global and Local Motion Dynamics. In Proceedings of the 17th European Conference on Computer Vision. `https://doi.org/10.1007/978-3-031-19790-1_5`

2022 Aram Davtyan, Sepehr Sameni, Llukman Cerkezi, Givi Meishvili, Adam Bielski, Paolo Favaro. KOALA: A Kalman Optimization Algorithm with Loss Adaptivity. In Proceedings of the 36th AAAI Conference on Artificial Intelligence. `https://doi.org/10.1609/aaai.v36i6.20599`

2020 Aram Davtyan, Alexander Rodin, Ilya Muchnik, Alexey Romashkin. Oil production forecast models based on sliding window regression. Journal of Petroleum Science and Engineering, Volume 195, 2020, 107916, ISSN 0920-4105. `https://doi.org/10.1016/j.petrol.2020.107916.`

Other Experience

2014-2018 Organizer of «Matprazdnik» (a math olympiad for 1000+ high school students around Russia) graded their work and distributed the prizes

Skills

Computer Skills Algorithms and data structures, Machine Learning, Artificial Neural Networks and Computer vision

C/C++, Python (numpy, pandas, sklearn, etc)

Pytorch, Tensorflow, Keras

Basic skills in SQL, experienced in MapReduce

SVN, Git

Wolfram Mathematica, LaTeX

The basics of computer structure and UNIX operating system

Mathematics Strong knowledge of functional analysis, probability theory, statistics

Achievements

Data Science Case championship "Changellenge CupIT 2018" Data Science section (Winner)

English Lomonosov Moscow State University VII Annual Conference for Students in English (2nd prize awarded, 2016)

Mathematics University Olympiad in Topology and Differential Geometry (Prize 2015)

Physics Participated in Russian Olympiad in Physics Finals (top-200 in Russia)

Personal information

Languages English (fluent), German (B2), Russian (native), Armenian (mother language)

Hobbies Sports (martial arts, rock climbing), playing guitar, reading