Nina Kaploukhaya

Education

2021 – 2023	**Sapienza University of Rome**, Master. *Data Science* **GPA**: 26/30
2017 – 2021	**Moscow Institute of Physics and Technology**, Bachelor. *Department of Control and Applied Mathematics* Specialisation: **Data Science**, Institute for Information Transmission Problems (**IITP RAS**) **GPA: 4.8/5.0**

Technical Skills

Program. languages	PYTHON, R, BASH, C++, MATLAB, SQL
Tech stack	PyTorch, Quantlib, allennlp, networkx, NumPy, SciPy, pandas
Professional software	Microstrategy, LaTeX, Github, PyCharm, AWS
GRE:	**316**/340, Quantitative: **167**/170
Main completed courses:	

- o Mathematical Statistics
- o Machine Learning
- o Optimization Methods
- o Computational Mathematics
- o Functional Analysis
- o Stochastic Processes
- o Control Theory

- o Calculus, Complex Analysis
- o Linear and Abstract Algebra
- o Probability Theory
- o Algorithms, Discrete Analysis
- o CS, Database Design, SQL
- o Python, C++
- o Computer Science

Language Proficiency

English: **C1**

TOEFL IBT: 102/120

Work Experience

Nov.2022 - Pres.	**Intern at TIM Data Market Learning Team**. Internship at TIM as data analyst
Aug. 2022 - Pres.	**Teaching Assistant at Sapienza University**, *TA for **Algorithmic Methods of Data Mining** and Laboratory course for the 1st year master students*. Prof.: Aris Anagnostopoulos, professor of Computer Science at Sapienza University of Rome. Helping professor Anagnostopoulos to compose homework for first year students, testing tasks and checking students' homeworks.
Aug. 2020 - Feb. 2022	**Research Intern in Skoltech**, *Member of the Skoltech Center for Computational and Data-Intensive Science and Engineering (CDISE)*. Supervisors: Evgeny Burnaev, professor of Skoltech, and Alexey Zaytsev, Assistant professor of Skoltech, IITP RAS. Project for **SberBank**: Develop defences from high performing adversarial attacks for discrete sequential money transactions data. Research the robustness of *sequential models*, namely, their vulnerability to *adversarial attacks*. Examine the level of resistance of different types of models (**GRU/LSTM/RNN/Transformer/BERT/Metric learning**) to adversarial attacks. Consider models trained on data with full and partial labeling, as well as various attack scenarios, including black-box and white-box scenarios. Framework: **PyTorch**. COHORTNEY project: develop *new clustering algorithm* for clustering event sequences in collaboration with my colleague. Compare its performance with other baseline clustering algorithms.

June - August 2020	**Internship in IITP RAS. Adversarial attacks.**
	Research on *white-box attacks*. Improved Hot Flip attack performance, implemented *gumbel-softmax* function instead of argmax function and examined how temperature in gumbel-softmax function affects attack performance. Researched how limit of *cosine similarity* correlates with attack performance.
Oct. 2019 - Feb.2022	**Maths teacher and organizer in MathLabs.**
	Teach three groups of high school students and four groups of secondary school students how to solve complex maths problems. Organize maths competitions and seminars for school students.

Publications & Projects

2021/2022	**COHORTNEY: Deep Clustering for Heterogeneous Event Sequences.**
	Supervisor: Alexey Zaytsev, PhD, IITP RAS, Skoltech.
	Introduce COHORTNEY - new algorithm for clustering event sequences. Compare its performance with other common algorithms.
	The paper: "COHORTNEY: Non-Parametric Clustering of Event Sequences" (`https://arxiv.org/abs/2104.01440`).
2020/2021	**KDD 2021. Adversarial Attacks on Deep Models for Financial Transaction Records.**
	Supervisor: Alexey Zaytsev, PhD, IITP RAS, Skoltech.
	The paper: "Adversarial Attacks on Deep Models for Financial Transaction Records", published at **KDD 2021** (`https://www.kdd.org/kdd2021/`).
2020/2021	**Bachelor's thesis. Adversarial blackbox attacks.**
	Supervisor: Alexey Zaytsev, PhD, IITP RAS, Skoltech.
	Performed research in adversarial blackbox attacks on various classifiers, including deep neural networks. Successfully defend the **thesis**, obtain **the highest grade**.
2020	**Optimization project.**
	Supervisor: Daniil Merkulov, PhD, Skoltech.
	Solved *tsp problem and vehicle routing problem with time windows* using different approaches (*simulated annealing, genetics algorithm, branch and bound method and Gurobi and MIP solver*). Visualized decision with *Google Maps API.*.
	In **top of class** projects: `https://merkulov.top/2020/09/01/opt2020/`.