Alesya Raevskaya

+358 40 327 45 79 raevskaya.alesya@gmail.com https://github.com/Esya-rae
https://orcid.org/0009-0005-9420-7161

Education

Aalto University Jun 2025 - Present
PhD in Computer Science under supervision of Jukka Suomela *Helsinki, Finland*

- **Research topics:** Locality in distributed algorithms, formalisation and robustness in distributed computing, locally checkable labbeling problems (LCLs), Lean proof assistant

Aalto University Sep 2023 - Apr 2025
MSc in Computer, Communication and Information Science (GPA: 4.95 / 5.00) *Helsinki, Finland*

- **Relevant Coursework:** Principles of Algorithmic Techniques D, Advanced Course in Algorithms D, Logic and Hard Computational Problems D, Declarative Programming D, Graph Theory D, Distributed Algorithms D

Higher School of Economics (HSE) Sep 2019 - Jun 2023
BSc in Applied Mathematics and Information Science (GPA: 7.8 / 10.00) *Moscow, Russia*

- **Relevant Coursework:** Algorithms and Data Structures, C++, Python, Calculus, Linear algebra, Discrete math, Group Theory, Probability theory, Statistics, Machine Learning, Deep Learning, Bioinformatics, Applied Statistical Data Analysis, Large Scale Machine Learning

Publications

Optimal Counterfactual Explanations for Random Forests with MaxSAT to appear ECAI 2025
A. Raevskaya, T. Lehtonen

Language skills

Russian: native speaker
English: 8.0 IELTS (C1) 29.10.2022
Finnish : 3 YKI (B1) 24.05.2025

Research Experience

Visiting Research Fellow - Distributed Algorithms Group Aug 2025
CISPA *Germany*

- Host: Sebastian Brandt

Research Assistant - AI and Software Systems research group Jun 2024 – Dec 2024
Aalto University *Espoo, Finland*

- Conducted research on the interpretability of random forest models by developing improved methods for counterfactual explanations
- Used MxSAT solvers and extended existing approaches such as MACE and OCEAN

Research Assistant - Computational Biology research group Aug 2022 – Jan 2023
Aalto University *Espoo, Finland*

- Conducted research on RNA structures, utilizing different Deep Learning models to predict secondary RNA structures from nucleotide sequences
- Adapted Recurrent Neural Networks architecture for the prediction of RNA structures

Research Assistant - Computational Biology research group Jun 2021 – Aug 2021
Aalto University *Espoo, Finland*

- Created an approximation of tree-distance algorithm which increased speed of comparison between RNA secondary structures by 256 times
- Established a predictive relationship between RNA structure and function through the systematic clustering of RNAs based on their secondary structural configurations, achieving an F-measure of 72%

Teaching Experience

Teacher Assistant - Distributed Algorithms D Sep 2025 – Present
Aalto University *Espoo, Finland*

- Graded assignments multiple times per week, delivering accurate and constructive feedback to support student progress and success
- Conduct hands-on sessions weekly to strengthen understanding of course topics, promote collaboration and active involvement

Teacher Assistant - Principles of Algorithmic Techniques Sep 2024 – Dec 2024
Aalto University *Espoo, Finland*

- Conducted several weekly exercise sessions and graded assignments of over 180 students
- Worked with the instructor to enhance teaching methods and student learning experiences

Teacher Assistant - Calculus & Advanced Calculus Sep 2021 – Jun 2022
HSE University *Moscow, Russia*

- Assisted multiple groups with a total of over 150 students by coordinating exercise sessions for further explanations of course concepts
- Graded weekly assignments and quizzes and coordinated oral examination via Zoom
- Maintained and updated course websites with relevant information, enhancing accessibility for students and faculty

Teacher Assistant - Algorithms and Data Structures Sep 2020 – Jun 2021
HSE University *Moscow, Russia*

- Assisted a group of over 30 students with course-related questions and homework
- Conducted study sessions and shared extracurricular materials
- Reviewed coding assignments and provided students with technical support

Theses

Optimal Counterfactual Explanations for Random Forests with MaxSAT | MSc Thesis| *MaxSAT, RC2, PyTorch*

- Created a MaxSAT encoding for multiple distance function
- Made a framework for practical applications
- Outperformed state-of-the-art approaches in most cases

Triplex prediction based on omics data | BSc Thesis| *PyTorch, Sklearn, DeepZ, NumPy, PyPlt*

- Conducted a research in the area of triplex-DNA prediction
- Experimented with different DL-architectures solving segmentation and classification problems for triplex-prediction based on previous research on Z-DNA predictions
- Achieved accuracy up to 89%

Technical Skills

Languages: Python, C++, Haskell, R, C#, MiniZinc, Lean
Data & Visualisation: Spark, Pandas, MongoDB, Matplotlib, Seaborn, Plotly, Prettytables
ML & Math : PyTorch, Transformers, CatBoost, SciKit-Learn, NumPy, XGBoost, K-Medoids
Cloud : GCP, Docker, Terraform, Kubernetes, OpenAPI, FastApi, RabbitMQ, gRPC
Other: Git, Bash, GitLab, GitHub, GitLab CI