

Aleksei Liuliakov

PhD candidate in the [Machine Learning group \(HammerLab\)](#) at
Bielefeld University

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RESEARCH

- **AutoML for Sparse and Interpretable Models:** Developed iterative AutoML pipelines (TPOT, Optuna, NSGA-II) optimizing for accuracy and sparsity. Enabled interpretable sparse anomaly detectors for intrusion and outlier detection.
- **Dynamic Graph-Based Intrusion Detection:** Proposed TGN-SVDD, combining dynamic graph embeddings with deep one-class classification. Outperformed classical anomaly detectors on CIC-IDS2017.
- **Robust Intrusion Detection:** Extended TGN-SVDD to probabilistic frameworks (RTGN-SVDD), introducing uncertainty modeling and robust detection under noise/adversarial conditions.
- **Publications:** Published in **IDEAL**, **ICANN**, **ESANN**, **Applied Soft Computing**.

EDUCATION

- **Bielefeld University** Bielefeld, Germany
PhD (ongoing) in Machine Learning *2020 – Present*
- **Bielefeld University** Bielefeld, Germany
M.Sc. Data Science *2018 – 2020*
 - **Thesis:** Automated Machine Learning (AutoML) technologies for feature selection
- **Novosibirsk State University** Novosibirsk, Russia
M.Sc. Econometrics & Quantitative Economics *2007 – 2010*
 - **Topics:** Econometrics, mathematical economics
- **Novosibirsk State University** Novosibirsk, Russia
B.Sc. Physics *2003 – 2007*
 - **Topics:** Higher algebra, analytical geometry, differential equations

EXPERIENCE

- **Bielefeld University** Bielefeld, Germany
PhD Candidate — Machine Learning *2020 – Present*
- **Research:** Anomaly & OOD detection with AutoML, GNNs, probabilistic methods.
- **Publications:** International conferences and journals.
- **Bielefeld University** Bielefeld, Germany
Tutor & Supervisor — Applied Optimization *2023 – 2025*
- **Teaching:** Designed and taught applied optimization exercises, supervised tutorials.
- **Bielefeld University** Bielefeld, Germany
Seminar Supervisor — AI Act in Machine Learning *2024 – 2025*
- **Supervision:** Guided students in topic research, presentations, applied projects.
- **Baltik Bread Novosibirsk** Novosibirsk, Russia
Founder & CEO *2011 – 2018*
- **Management:** Led manufacture and sales units (25 employees), strategic planning, partner relations.

PUBLICATIONS

- **Noise Robust One-Class Intrusion Detection on Dynamic Graphs:** A. Liuliakov et al., **ESANN**, 2024
- **One-Class Intrusion Detection with Dynamic Graphs:** A. Liuliakov et al., **ICANN**, 2023
- **AutoML technologies for the identification of sparse classification and outlier detection models:** A. Liuliakov et al., **Applied Soft Computing**, 2023
- **AutoML Technologies for the Identification of Sparse Models:** A. Liuliakov et al., **IDEAL**, 2021

TEACHING

- **Bielefeld University** Bielefeld, Germany
Tutor & Supervisor — Applied Optimization *2023 – 2025*
 - **Teaching:** Designed and taught applied optimization exercises, supervised tutorials.
- **Bielefeld University** Bielefeld, Germany
Seminar Supervisor — AI Act in Machine Learning *2024 – 2025*
 - **Supervision:** Guided students in topic research, presentations, applied projects.