

Stepan Kulibaba

Machine Learning Engineer

Sirius University — Design, Development and Management of Complex Information Systems

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Profile. ML engineer focused on LLMs, multi-agent systems, AutoML, optimization, and recommender systems; building research-driven ML systems with strong mathematical foundations and reliable engineering.

EXPERIENCE

Research ML Developer

- Developed LLM-based mathematical reasoning systems for USE and olympiad problems, integrating symbolic solvers, numerical methods, tool orchestration, and evaluation pipelines.

Research ML Developer

- Built components of an AI research-assistant system for literature processing, hypothesis exploration, scientific information extraction, and RAG-based workflows.

Research ML Developer

- Worked on adaptive batch-size and step-size methods for distributed LLM training to reduce communication cost and accelerate convergence.

SELECTED PROJECTS

- KompeteAI** — LLM-based multi-agent AutoML system for solving Kaggle-style machine learning competitions, 2025.
- Olympiad Math Solver** — LLM-based system for solving olympiad-level mathematical tasks, 2024.
- Neuroevolutionary Life Modeling** — modeling life-like processes using neuroevolutionary algorithms, 2023.

SKILLS

Languages: Python, C++, SQL, Bash

ML / DL: PyTorch, PyTorch Geometric, Transformers, scikit-learn, NumPy, Pandas, OpenCV

LLM / Retrieval: RAG, Hugging Face, LangChain, Llamaindex, FAISS, Qdrant

Engineering / MLOps: FastAPI, Docker, Git, Linux, PostgreSQL, Weights & Biases, MLflow

Core: Machine Learning, NLP, Algorithms and Data Structures, Mathematical Optimization

EDUCATION & PROGRAMS

- Sirius University**, Design, Development and Management of Complex Information Systems, 2024–Present.
- Kapitsa Phystech Lyceum**, 2022–2024.

PUBLICATIONS

- SDG-MoE: Signed Debate Graph Mixture-of-Experts, 2026**
First author. [arXiv:2605.08322](#)
- KompeteAI: Accelerated Autonomous Multi-Agent System for End-to-End Pipeline Generation for Machine Learning Problems, 2025**
First author. [arXiv:2508.10177](#) · [OpenReview](#)
- AdLoCo: Adaptive Batching Significantly Improves Communications Efficiency and Convergence for Large Language Models, 2025**
[arXiv:2508.18182](#)
- Exploring Applications of State Space Models and Advanced Training Techniques in Sequential Recommendations, ICOMP 2024**
[arXiv:2408.05606](#)

ACADEMIC ACHIEVEMENTS

- Absolute Winner**, All-Russian Grand Challenges competition in Artificial Intelligence, 2026.
- Gold Medalist**, All-Russian Grand Challenges competition in Artificial Intelligence, 2024 and 2025.
- First-Degree Prize Winner**, All-Russian Olympiad in Informatics.
- Gold Medalist**, National Statistics and Data Analysis Olympiad, 2024 and 2025.
- Candidate**, Russian National Team for the International Olympiad in Artificial Intelligence.
- Special Nomination**, most technological solution, All-Russian AI Hackathon “AI Arrow”.
- Medalist in national-level competitions in Physics and Mathematics.
- Finalist of international AI competitions.

RESEARCH INTERESTS

- Large Language Models and efficient training
- Mixture-of-Experts and model routing
- Synthetic data generation and evaluation
- Multi-agent systems for ML automation
- AutoML, optimization, and recommender systems