Mikhail Tiuterev

Bonn 53119, Germany

mikhail.tiuterev@gmail.com

0157 31323284

tiuterevmt

miketio

Introduction

Applied scientist and MSc Physics candidate (Univ. of Bonn) focused on ML-driven modeling and automation for physical systems. Experienced building experiment control software (Python, PyQt5), optimizing system performance with gradient and derivative-free methods, and deploying lightweight ML models (PyTorch) in production and competition settings. Strong background in numerical simulation (COMSOL, MATLAB) and hands-on manufacturing (carbon-fiber components). Open to roles in applied ML, controls automation, or data engineering.

I also present my key projects and experience in a short **video resume** available here*).

Education

M.Sc. **University of Bonn**, Physics — Bonn, Germany — Nov 2023 – expected Apr 2026

- Score: 2.2/5 (German scale: 1.0 = best, 5.0 = fail)
- IT courses score: 1.3
- **Poster author** on the OSCAR* annual retreat
- **Thesis:** Localization landscape in quasiperiodic plasmonic waveguide arrays

B.Sc. **Saint-Petersburg State University**, Applied Math & Physics — Saint-Petersburg, Russia — Sep 2019 – Jul 2023

- Graduated with distinctions
- Score: 4.9/5.0 **(Top 1%)**
- Scientific article* co-author
- **Thesis:** Analysis of numerical models describing the aging of lithium-ion batteries due to the formation of a solid-electrolyte interface layer
  `github.com/miketio/comsol_battery`*

Experience

GET Racing — Aerodynamics Team Member — Dortmund, Germany — Jan 2025 – now

- Designed aerodynamic components (**Creo**) and manufactured carbon-fiber aero parts.
- Contributed to a **30%** increase in downforce and improved manufacturing quality

University of Bonn — Research Assistant — Bonn, Germany — Aug 2024 – Oct 2024

- Built a multi-threaded **Python/PyQt5** controller for real-time laser-intensity control with integrated signal processing and Adam/Nelder–Mead optimisation.
- Enabled long, unattended measurement runs by **eliminating manual tuning**; reduced operator intervention from repeated daily checks to overnight autonomy.
- Delivered modular control and logging code (GitHub*) that improved reproducibility and accelerated data collection

Competitions & Hackathons

DeepRacer Cup (Audi & AWS), Top 20 Finalist — Aug 2025 - Oct 2025

- **Topic:** Autonomous racing with **reinforcement learning**
- Optimized (**Metropolis-Hastings**) action-space (race line, speed, steering); ran local **PyTorch** simulations for the reward function optimization; deployed models on AWS.
- Got position 19 in the finals out of 400 participants.

Tech Arena — Huawei (Sweden) Top 7 Finalist — Jul 2025 - Aug 2025

- **Topic: AI-enabled SVD** operator for wireless communications (128×128 → rank-64)
- Built a **hybrid CNN & Transformer** model; optimized compute (<8M MACs) and placed 7/80.

Tech Arena — Huawei (Nuremberg 2024), 3rd place — Sep 2024 - Jan 2025

- **Topic:** State-of-Charge (SoC) estimation from noisy voltage/current
- Implemented an **Extended Kalman Filter** and tuned parameters (**Nelder–Mead**) for accurate SoC estimation.

Other hackathons — 2024 - 2025

- **IFM Hackathon 2025** (1st) — RFID initialization app with SAP BTP middleware integration.
- **Huawei Tech Arena** (Nuremberg 2025, ongoing) — Battery Energy Storage System (BESS) energy optimization (SciPy LP for DA/FCR/aFRR).
- **DFL Hackathon** — dynamic pricing (Bellman eqn + Monte Carlo simulations).
- **RWTH Mining Hackathon** (3rd) — on-demand 3D spare parts delivery strategy.
- **NKU Hackathon** (final) — flood simulation GUI.
- **World Engineering Day** — climate-resilience solutions for smallholder farming.
- **IFM Hackathon 2024** (final) — racing telemetry ML for lap-time prediction.

Skills

Programming Languages / Tools

Python (numpy, scipy, pandas, PyTorch, TensorFlow, scikit-learn, matplotlib, etc), MATLAB (Optimization Toolbox, Simulink, Image Processing, Curve Fitting, Statistics), Git / GitHub, Linux (bash), COMSOL (multiphysics modules, Hydrodynamics, ODE modules, etc), Autodesk (Inventor & Fusion), VBA, LaTeX, PyQt5, Arduino, Optimization solvers (SciPy linprog)

Theoretical Background

ML & Deep Learning (supervised, unsupervised, transfer learning, model selection), NN (CNN, RNN, Transformers), Reinforcement Learning, Advanced Optimization (gradient methods, Nelder–Mead, ADAM, SGD, LP/QP formulation), Statistical Methods (hypothesis testing, regression), Time Series Analysis & Forecasting, Stochastic Processes & Monte Carlo methods, Kalman Filters, Signal & Image Processing, Finite Element Methods, Numerical Methods (linear algebra, solvers, stability), Probabilistic Modeling, Experimental Design, Data Engineering fundamentals, OOP & Software Design

Languages

English (Professional)