TATIANA SOROKINA

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ABOUT ME

I am a recent graduate of a master's program in math seeking a position at the intersection of **Quantitative and AI Research in Financial Markets**, starting in **November 2025**. My background includes financial mathematics, macroeconomic modelling and research, risk analysis for credit portfolio management, and teaching statistics and data science.

EDUCATION

Master's in Mathematics and Economic Decision, Toulouse School of Economics **Sep 2023 - Nov 2025**
- Expected GPA 15.5/20.0 *Toulouse, France*
- Fully-covered tuition fees; merit-based Eiffel Excellence Scholarship; TSH Talent Foundation fellowship
- **Coursework**: Functional Analysis, Stochastic Optimal Control, Optimal Transport, Mathematical Game Theory; Optimisation and Statistics of Machine Learning; Program Evaluation, Non-Parametric and Financial Econometrics; Macro-Finance Models in Continuous-Time, Financial Regulation, Capital Markets, Contract Theory
- **Term Paper**: Feynman–Kac Framework for Parabolic PDEs: Foundations and Application to Option Pricing

Bachelor's in Economics and Statistics (Data Science Minor), Higher School of Economics **2019 - 2023**
- CGPA 4.6/5.0, top 3% of the program *Moscow, Russia*
- Fully-covered tuition fees; scholarship for high academic performance
- **Coursework**: Advanced Statistic Methods, Econometrics; Stochastic Processes, Dynamic Optimisation; Applied ML; Deep Learning, MLOPS; Financial Economics and Markets, Intermediate Micro- and Macro- Economics

Cycle Ingénieur, Statistics, 2nd year, ENSAE - IP Paris **Spring Semester 2022**
- Exchange semester at a leading statistical grande école, courses in French *Palaiseau, France*
- Merit-based scholarship named after Prof. Lev Lyubumov (affiliated with the HSE)
- **Coursework**: Advanced Econometrics, Time Series Modelling; Financial Mathematics and Asset Pricing; International Trade; Non-Life Insurance

WORK EXPERIENCE

Quantitative Research Internship **May 2025 - Oct 2025**
BNP Paribas, Global Markets *Paris, France*

- Use Graph Neural Network to enhance portfolio P&L prediction by capturing asset interrelationships

Quantitative Research Internship **Jul 2024 - Sep 2024**
BNP Paribas, Global Markets *Frankfurt am Main, Germany*

- Research on Stable Diffusion models for finanical data generation;
- Generated data intended for high-frequency algorithmic model back-testing and model impact estimation;
- Working with Transformer, UNet architectures in PyTorch as a base for a diffusion kernel

Risk Analyst, revolving credit products **Mar 2023 - Aug 2023**
Tinkoff Bank, TCS Group *Moscow, Russia*

- Developed and integrated a risk-free limit pricing strategy for the main credit product;
- Maintenance and development of statistical models for the counter-party risk prediction;
- Research on AB-test sensitivity, NPV-model development;
- Stress tests (Monte-Carlo) of the credit portfolio

RESEARCH AND TEACHING EXPERIENCE

Research Internship in Macroeconomic Modelling **Feb 2023 - present**
HSE, Laboratory of Macro-Structural Modeling of the Russian Economy *Moscow, Russia*

- Developed a neural-network solution algorithm (Pytorch) for solving high-dimensional empirical dynamic stochastic general equilibrium models; verified model parameters' convergence bounds;
- Conference talk on the identification of parameters in dynamic structural models;
- Automation of data-scraping for monthly now-casting of Russian macroeconomic statistics

Teaching Assistant **Sep 2022 - Jul 2024**
HSE, Faculties of Economic and Computer Sciences *Moscow, Russia*

- **Data Analysis in Python** - compiled and taught practice sessions for Bachelor's students in the Economics program; prepared seminars, prepared and graded exam papers;
- **Introduction to Deep Learning**, and **Applied Data Analysis Problems** (Evgeny Sokolov) - prepared homework on ML usage for business data, time series analysis, recommendation systems; graded homework on DL for sound, CV (YOLO model), NLP (transformers), generative models (GAN, VAE, diffusion models);
- **Macroeconomics** (Irina Kavitskaya, Olga Osotova)

Solving and Estimating Non-Linear HANK Models With Machine Learning **Jan 2023 - May 2023**
HSE, Faculty of Economic Sciences (supervisor Nikolay Pilnik) *Moscow, Russia*

- Study on Neural Network solution algorithms for structural large-scale dynamic models in economics and finance; survey of the literature on structural parameters identification in dynamic models

Research Internship in Computational Economics with Pablo Winant **Jul 2022 - Aug 2022**
Center for Research in Economics and Statistics (CREST) *Palaiseau, France*

- Research for the article "Deep learning for solving dynamic economic models" from a top-10 economic journal;
- Created Neural Network algorithm (Tensorflow, JAX) for solving fundamental dynamic economic models; reviewed existing theoretical frameworks of Deep Learning usage for Computational Economics

Analysing Russian Central Bank Communication Impact on Monetary Policy Effectiveness with NLP **Jan 2022 - Jun 2022** *Moscow, Russia*
HSE, Faculty of Economic Sciences (supervisor Mariam Mamedli)

- Customised a transformer model for information extraction on economic topics (Russian language) to quantify the informational component of news and Central Bank's press releases;
- Discovered that accounting for the informational channel of monetary shocks improves the significance of high-frequency shocks as instruments in an SVAR model of the economy

SKILLS

Keywords	**Quantitative Research, Mathematical Finance, Credit Risk Management, Econometrics, Causal Inference, Reinforcement Learning, Generative Models**
Soft Skills	adaptability, problem-solving, teamwork, attention to detail, concise instructions
Programming	Python (Tensorflow, PyTorch, Scikit-Learn, Keras), R, Postgre-SQL, Matlab
Other Software	statistical packages (Stata, EViews, advanced Microsoft Office) data management (Greenplum, GIT, Bash),
Languages	Russian (native), English (C1, TOEFL 110/120), French (C1, DALF), German (A2)

CONTACTS

Nikolay Pilnik (supervisor)
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