TATIANA SOROKINA

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EDUCATION

Master's in Mathematics and Economic Decision, Toulouse School of Economics **Sep 2023 - present**
- Fully-covered tuition fees; receiver of the merit-based Eiffel Excellence Scholarship *Toulouse, France*
- **Coursework**: Functional Analysis, Stochastic Deferential Equations, Stochastic Calculus, Mathematical Game Theory; Optimisation and Statistics of ML; Impact Evaluation, Non-Parametric Model Estimation

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 (cohort size 135) *Moscow, Russia*
- Fully-covered tuition fees; a scholarship for high academic performance
- **Coursework**: Advanced Statistic Methods, Econometrics; Stochastic Processes and Modelling, Dynamic Optimisation; Game Theory; Applied ML; Big Data ML; Financial Markets and Participants, Financial 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 and Global Markets; Non-Life Insurance

WORK EXPERIENCE (>5 YEARS)

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

- Research on Stable Diffusion models for financial 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 into production a risk-free limit pricing strategy for the main credit product;
- Conducted theoretical and experimental research on developing a tool for AB-test sensitivity augmentation;
- Executed and presented monthly stress tests of the credit portfolio using Monte-Carlo simulation techniques;
- Built statistical models for the counter-party risk prediction

Operations Manager **Jul 2019 - Jan 2024**
Agricultural biotech startup Biofarminvest Ltd. *Ramenskoye, Russia*

- Optimised production and delivery operations in the early stages of the startup;
- Operated the extension of the product line and monitored the market;
- Developed a prototype of a client-relations system;
- Managed cross-border sales, connections with international clientele and research contracts

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 solution algorithm (Pytorch, Tensorflow) and verified the theoretical base for the project on neural networks usage for solving high-dimensional empirical dynamic stochastic general equilibrium models;
- Gave a conference talk on the identification of parameters in dynamic structural models;
- Reviewed the data for monthly nowcasting models of the 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-1** (Irina Kavitskaya), **Macroeconomics-2** (Olga Osotova) - gave consultations to Bachelor's students, graded assignments, assembled additional materials for exam preparation, held the exams

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

- Bachelor's Thesis paper, written under the supervision of Nikolay Pilnik (revised for publication);
- 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 (in tensorflow and JAX, Python) 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 Natural Language Processing **Jan 2022 - Jun 2022**
Moscow, Russia
HSE, Faculty of Economic Sciences

- Third-year term paper, written under supervision of Mariam Mamedli
- Customised a transformer model for information extraction on economic topics (Russian language) to quantify the informational component of Central Bank's press releases and economic and financial news;
- 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	**Econometrics, Causal Inference, Reinforcement Learning, Generative Models, Credit Risk Management**
Soft Skills	adaptability, problem-solving, teamwork, attention to detail, concise instructions
Programming	Python (Tensorflow, PyTorch, Scikit-Learn, Keras), R, SQL (Postgre, Server), Matlab
Other Software	statistical packages (Stata, EViews, advanced Microsoft Office) data management (Greenplum, GIT, Bash), data visualisation (Tableau) project management (Jira, Confluence) layout languages (HTML, CSS, LaTex)
Languages	Russian (native speaker), English (C1, TOEFL 110/120), French (B2), German (A2)

CONTACTS

Nikolay Pilnik (supervisor)	PhD in Economics; Assistant Professor at the HSE; Senior Research Fellow Laboratory for Macro-Structural Modeling of the Russian Economy E-mail: npilnik@hse.ru Phone: +7 (495) 772-95-90 (code 27501) Address: 11 Pokrovsky Bulvar, Pokrovka Complex, room T618, Moscow, Russia