KIRILL ZAKHAROV

ML Researcher, Applied Mathematician, Data Scientist

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EXPERIENCE

- ML Researcher
  ITMO University, Russia
  2022 – present
- Development of synthetic time series generation method
  Sber bank
  2022 – 2023
- Deposit duration forecasting
  BSPB
  2023 – 2024
- Jump diffusion stochastic processes modelling based on neural stochastic differential equations in financial tasks
  Sber bank
  2023 – 2024

SKILLS

- Classical and advanced ML (classification, regression, clustering, Bayesian ML)
- Deep learning (CNN, RNN, GAN, Flows, Diffusion models, VAE, Neural SDE, transformers)
- Synthetic data generation (time series, tabular data, transactions)
- Applications of Stochastic Calculus and Measure Theory (SDE, stochastic integrals, stochastic processes, Itô calculus)
- Applications of Probability theory (probabilistic modelling, statistics)
- Pricing derivatives (forwards, options pricing, measure change, binomial model, computational finance)
- Optimization methods and numerical analysis (NN training algorithms, numerical derivative pricing, linear programming, portfolio optimization)
- Mathematical modelling (building economic models)
- Programming languages: Python (torch, keras, numpy, pandas, scipy, sklearn, statsmodels), Wolfram Mathematica (mathematical calculations and prototyping), C (scripts for python)

EDUCATION

Bachelor of Science in Applied Mathematics and Informatics
SPbSUE
Sept 2018 – June 2022

Master of Science in Financial Technologies of Big Data
ITMO
Sept 2022 – June 2024

PUBLICATIONS

- Synthetic financial time series generation with regime clustering, 2023
  doi: 10.12720/jait.14.6.1372-1381
- TRGAN: A Time-Dependent Generative Adversarial Network for Synthetic Transactional Data Generation, 2023 (in print)
- Time-dependent differential privacy for enhanced data protection in synthetic transaction generation, 2024 (in print)
- Multivariate Time Series Modelling with Neural SDE driven by Jump Diffusion, 2024 (in print)

PREPRINTS AND RESEARCHES

- Mathematical analysis of break-even points and return bounds for option strategies, 2024
  doi: 10.13140/RG.2.2.15945.76649
- Optimisation methods. Theorems, 2023
  doi: 10.13140/RG.2.2.36071.01440
- Option pricing modelling based on stochastic differential equations, 2022
  doi: 10.13140/RG.2.2.13255.37280
- Spherical and Elliptical distributions, 2021
  doi: 10.13140/RG.2.2.15639.24484

CONFERENCES

- ICCS, Málaga, Spain, 2024
- ICSCA, Bali, Indonesia, 2024
- ICCSIT, Paris, France, 2023
- ICSeB, Osaka, Japan, 2023
- CMY, Saint Petersburg, Russia, 2023
- CMY, Saint Petersburg, Russia, 2024

COURSES

- Pricing Options with Mathematical Models, Caltech – Coursera, 2022
- Stochastic Processes, HSE – Coursera, 2022
- Probability Theory, CSC – Stepik, 2022
- AI Frontiers, Saint Petersburg, 2023

COMPETITIONS

- 1th place – ITMO HACK FinTech case, 2022
- 5th place – Rosneft Hackathon, 2022
- 3th place – GPN CUP Data Science, 2021