Oleksandr Volkov

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Education

- **University of California, Berkeley** *August 2025 - May 2025*
  Master of Arts in Statistics Berkeley, CA
- **Taras Shevchenko National University of Kyiv** *September 2021 - June 2025*
  Bachelor of Software Engineering Kyiv, Ukraine
  - GPA: 3.9 / 4.0 | Graduated with honors
  - Relevant Coursework: Data Structures & Algorithms, Data Analysis, Probability Theory, Statistics, General Algebra, Machine Learning, NLP, Object-Oriented Programming, Software Engineering, Operating Systems

Academic Research Experience

- **University of California at Berkeley, Department of Statisitcs** *September 2025 - present*
  Graduate Student Researcher
  - Research project on continuous approaches to tree-structured machine learning models to improve stability and accuracy in regression tasks, under the supervision of Professor Aditya Guntuboyina.
  - Research project on randomized dynamical systems and their connection to stochastic learning dynamics (e.g., SGD) to study convergence and generalization in high-dimensional models, under the supervision of Professor Alexander Strang.
- **Taras Shevchenko National University of Kyiv, Department of Cybernetics** *September 2023 - May 2024*
  Research Assistant
  - Studied q-binomial, negative q-binomial, and q-Poisson distribution families arising in q-calculus and quantum probability.
  - Used q-difference operators and generating-function operators to derive moment identities and structural relationships between these distributions.
  - Explored applications in statistical learning, where q-parameterization supports flexible regularization and noise modeling for discrete data.
- **Central Ukrainian State University, Department of Mathematics** *January 2023 - May 2025*
  Student Research Fellow
  - Investigated the application of linear operator theory in the structural analysis of statistical models.
  - Developed operator-based characterizations of stability, convergence, and identifiability for statistical estimators.
  - Applied these methods to both classical parametric statistics and modern machine learning models to study estimator behavior.
  - Analyzed iterative learning algorithms through their operator dynamics, relating convergence properties to the spectral structure of the associated operators.

Publications

[2025] Volkov O., Volkov Yu. "On the class of exponential statistical structures of type B"// Bulletin of Taras Shevchenko National University of Kyiv. [SUBMITED] URL

[2025] Volkov O., Volkov Yu., Voinalovych N. "Study of power series distributions with specified covariances" // Mohyla Mathematical Journal. [ACCEPTED] URL

[2024] Volkov O., Voinalovych N. "On a power series distribution with mean parameterization"// Scientific Bulletin of Uzhhorod University. Series of Mathematics and Informatics. URL

[2024] Voinalovych N., Volkov O. "Basic practical steps for data analysts in working with data" // Bulletin of Kremenchuk Mykhailo Ostrohradskyi National University. URL

Conference Talks

- **Volkov O., Volkov Yu.** "Methods of constructing multivariate power series distributions" *November 2025*
  XX International Scientific Mykhailo Kravchuk Conference [proceedings]
- **Volkov O., Voinalovych N.** "Optimizing credit scoring for banking institutions using the XGBoost machine learning algorithm" *April 2024*
  Information modeling technologies, systems and applications (IMTSA-2024) [proceedings]
- **Volkov O.** "One power series distribution with parameterization by mean" *June 2023*
  International Conference of Young Mathematicians. The Institute of Mathematics of the National Academy of Sciences of Ukraine [proceedings]

Work Experience

- **PrivatBank [🌐]** *March 2024 - May 2025*
  Junior Research Data Scientist Kyiv, Ukraine
  - Participated in building an Early Warning System for delinquency detection using a hybrid ARIMA + XGBoost approach, improving early-delinquency flagging by 10–15%.
  - Assisted in developing online model-adaptation mechanisms to refresh risk signals between full retraining cycles, enabling risk updates on 2M monthly borrower records without full retraining.
  - Applied classifier-based drift detection to monitor data-distribution shifts, detecting emerging portfolio-risk changes up to 2 months earlier than traditional metrics.

- **PricewaterhouseCoopers (PwC) [🌐]** *May 2023 - September 2023*
  Data Scientist intern Kyiv, Ukraine
  - Worked on ML-driven anomaly detection in financial statements, identifying unusual reporting patterns and potential early fraud signals, improving anomaly-flag coverage by 20%.
  - Applied Isolation Forest, Local Outlier Factor, and robust statistical methods to detect anomalies across >100 corporate financial datasets.
  - Integrated models into interactive dashboards and analytical workflows, enabling auditors to review high-risk cases 20–30% faster.

- **Ukrainian Bureau of Credit Histories [🌐]** *May 2022 - September 2022*
  Machine Learning Engineer intern Kyiv, Ukraine
  - Designed a working prototype enabling the new VECTOR datatype in client's credit histories database to store and query LLM embeddings, improving large-scale vector search and AI data analysis capabilities.
  - Developed a six-month credit-default prediction model for retail borrowers; The profit from loans issued using this model increased by 15%.

Teaching Experience

- **Taras Shevchenko National University of Kyiv**
  Teaching Assistant
  - Numerical Methods in Informatics *Fall 2024*
  - Probability Theory and Mathematical Statistics *Spring 2024*
  - Data Analysis *Fall 2023*
  - Mathematical Analysis II *Spring 2023*
  - Mathematical Analysis I *Fall 2022*

Awards

- Recipient of the **Academic Scholarship of the President of Ukraine**, the **highest national academic distinction**, for outstanding scientific achievements and academic excellence. *2025*
- Awarded **1st** place in the **National Mathematics Competition for University Students**, organized by Taras Shevchenko National University of Kyiv. *2022*
- Awarded the **Academic Scholarship of the President of Ukraine**, the **highest national academic distinction**, based on exceptional performance in the national university entrance exams (798/800). Granted to only 10 students nationwide. *2021*

SKILLS

Programming Languages: Python, R, SQL, C++

Machine Learning Libraries: scikit-learn, XGBoost, PyTorch, TensorFlow

Cloud: Google Cloud Platform (Vertex AI, Retail, Dataflow, Bigquery, Cloud SQL, BigTable, Cloud Run, Computer Engine)

Data Visualization Tools: Matplotlib, Seaborn, Looker, Grafana, Power BI

Other Tools: Pandas, NumPy, LangChain, Jupyter, Ollama, Spark, Flask, Git, Docker, Apache Cassandra, MS SQL Server

Language Proficiency: English (C1), Ukrainian (Native), Russian (Native)