

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 Statistics** 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 Yu., Volkov O. "Mixed exponential statistical structures and their approximation operators" // Matematychni Studii, Proceedings of the Lviv Mathematical Society [SUBMITTED] [URL](#)
- [2025] Volkov O., Volkov Yu. "On the class of exponential statistical structures of type B" // Bulletin of Taras Shevchenko National University of Kyiv. [SUBMITTED] [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)