Bowling Green, OH 43402
aluchi@bgsu.edu
alex-luchinsky

Alex Luchinsky

Ph.D. in Data Science

Website: alexey-luchinsky.com

Professional Summary

Scientist with extensive experience in data analytics, predictive modeling, and scalable solution development. Skilled in leveraging advanced programming and analytical techniques to drive strategic decisions and process improvements. Experienced in mentoring teams and managing complex projects.

Skills & Technologies

Programming: Python, R, C++, JavaScript, Wolfram Mathematica

Data Science & ML: Deep Learning, Neural Networks, Time Series Analysis, Topological Data Analysis (TDA), Data Mining, Statistical Modeling

Software Development: Web Applications, AWS, React, Python Dash, R Shiny

Data Engineering: SQL, pandas, NumPy, scikit-learn, PyTorch, Spark

Visualization & Reporting: Power BI, Tableau, LaTeX, Beamer, PowerPoint, Business Intelligence

Projects

R Shiny App for Schedule Creation of JSM 2025 Conference. **2025**
- Helps to create a schedule for the JSM2025 Conference
- Allows one to search and filter by speaker's name, presentation title, etc.
- Was used by some of the participats during the conference

University Women's Travelers Group Website. **2025**
- Developed dynamic website using JavaScript and SQL
- Integrated chatroom and forum for enhanced member communication
- Designed for easy content updates

TDAvec (R & Python Packages). **2025**
- Unified interface for multiple persistent homology vectorization methods
- Simplifies application of TDA in data science workflows
- Published and maintained on CRAN and PyPI

SAI Dashboard. **2023**
- Built KPI monitoring platform with React and MongoDB
- Enabled real-time performance tracking for hotel managers

DFin App. **2023**
- React + MongoDB web app for personal/business finance
- Managed financial records with interactive dashboards

BG-Courses. **2022**
- Academic requirement tracker in React
- Real-time student progress and graduation eligibility

Game of Life Simulation. **2022**
- Interactive Conway's Game of Life simulation in React
- Allows users to experiment with custom patterns

Professional Experience

Data Analyst, *Bowling Green State University*, Bowling Green, OH. **2023–2025**

- Designed, trained, and deployed machine learning models in Python and R for predictive analytics in enrollment forecasting and performance evaluation.
- Built end-to-end data pipelines for preprocessing, feature engineering, and model validation, ensuring reproducible and efficient ML workflows.
- Developed interactive dashboards in Power BI, enabling administrators to explore predictive results and trends in real time.
- Applied statistical modeling, clustering, and regression analysis to support institutional research and improve students' retention ratio

Adjunct Instructor, *Bowling Green State University*, Bowling Green, OH. **2019–2023**

- Taught undergraduate courses in physics, statistics, discrete math, and calculus, building strong foundations for applied data analysis and machine learning.
- Designed project-based assignments where students have shown their skills for soving real-life problems

Software Developer, *Senico Corp*, Bowling Green, OH. **2021**

- Developed a web-based KPI analytics platform for the hotel industry to automate performance monitoring and generate data-driven insights.
- Implemented backend services (Node.js, MongoDB) for data aggregation and frontend visualizations (React, JavaScript) to present model-based forecasts and trend analyses.
- Collaborated with management to translate operational data into predictive metrics for occupancy and revenue optimization.

Theoretical Physicist, *Institute for High Energy Physics*, Protvino, Russia. **2001–2015**

- Conducted advanced computational and theoretical research in high-energy physics, leading to numerous publications in peer-reviewed journals
- Presented research at international conferences and actively participated in global scientific collaborations
- Supervised and mentored Ph.D. students, guiding research projects and fostering the next generation of physicists
- Contributed to cross-institutional projects, strengthening research networks and collaborative outputs

Education

Ph.D., Data Science, *Bowling Green State University*, Bowling Green, OH. **2025**

M.S., Data Science, *Bowling Green State University*, Bowling Green, OH. **2021**

Ph.D., Physics, *Institute of High Energy Physics*. **2001**

Certifications & Awards

Multiple National and Institutional Research Grants

Publications in Machine Learning & Data Science Journals

Invited Speaker at Data Science & Computational Physics Conferences

Additional Experience

Organized Science Olympiads and academic competitions

Supervised Ph.D. students in computational research

Served as a peer reviewer for scientific journals

Publications & Research

2025: Umar Islambekov, Aleksei Luchinsky, "TDAvec: Computing Vector Summaries of Persistence Diagrams", JOSS)

2024: Aleksei Luchinsky, Umar Islambekov, "Vectorization of Persistence Diagrams for Topological Data Analysis in R and Python Using TDAvec Package", (arXiv:2411.17340

2020: "A Computationally Efficient Framework for Vector Representation of Persistence Diagrams" (Journal of Machine Learning Research, 23, 1-33, 2020)

Additional publications in theoretical physics journals

Conferences

20025: "A data-driven way to compute vector summaries of persistence diagrams using functional data analysis", Presentation at th JSM2025 conference