Nikita Korolko

CONTACT INFORMATION

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WORK EXPERIENCE

Waymo/Alphabet, Mountain View, CA **July 2023 - Present**
Product Data Science & Commercialization
Staff Data Scientist

- Real-time orchestration of the fleet of self-driving vehicles.
- State-of-the-art modeling and optimization of Waymo ride-hailing service.
- Design and deployment of mid-frequency time-series forecasting pipelines.

Citadel Securities, Chicago, IL **July 2019 - June 2023**
Systematic Equities Riskbook, Statistical Arbitrage
Quantitative Researcher

- Created multiple intraday and daily **alpha signals** based on various **alternative** datasets. Conducted all stages of alpha research: searched for new data and publications; generated original features; performed feature selection, fitting and evaluation; developed production code; maintained and improved the signals. Mentored junior team members.
- Designed computationally efficient and accurate approximations of multi-period **portfolio optimization** problems incorporating non-linear risk metrics, market impact models and transaction costs.

Uber Technologies HQ, San Francisco, CA **July 2017 - June 2019**
Marketplace Optimization & Demand Intelligence
Data Scientist

- Constructed rider demand functions at high spatial-temporal granularity using large-scale ML and OR techniques. Designed optimization methods for solving real-time trip price optimization problems at industrial scale. Developed a method to protect optimization algorithms from noise and errors in input data.
- Using data anomaly detection techniques I identified and investigated users payment fraud spanned across four major US cities with extensive costs to the platform.

Tesla Motors, Palo Alto, CA **Summer 2015**
Supply Chain Analytics and Optimization
Operations Research Scientist (Intern)
Designed an algorithm and software for highly efficient load packaging and optimization of inbound logistics that incurs multimillion annual savings for the company.

Mitsubishi Electric Research Laboratories, Cambridge, MA **Summer 2014**
Data Analytics Group
Operations Research Scientist (Intern)
Used time-series methods to develop accurate load forecasts for the power grid. Designed robust optimization pricing methodologies for EV charging in uncertain electricity markets.

COMPUTER SKILLS

- Programming: Python (pandas, numpy, scikit-learn, matplotlib), Git/SVN, SQL
- Scientific computing/Analytics: R/RStudio, TensorFlow, Matlab
- Mathematical modeling: Gurobi, CPLEX, IpOpt, JuMP/JuMPeR

EDUCATION

Massachusetts Institute of Technology, Cambridge, MA **2012 – 2017**
Operations Research Center & Laboratory for Information and Decision Systems
Ph.D. in Operations Research
Expertise in robust and adaptive optimization; machine learning and data analytics; data-driven decision making under uncertainty; optimal resource allocation; experimental design and logistics.

- Advisors: Dimitris Bertsimas, Patrick Jaillet

- PhD Thesis: A Robust Optimization Approach to Online Problems

Novosibirsk State University, Novosibirsk, Russia **2005 - 2011**
Department of Mechanics and Mathematics
B.S. & M.S., Mathematics, (Summa Cum Laude)
Major: Mathematical Analysis

Publications & Working Papers

"Covariate-Adaptive Optimization in Online Clinical Trials", D. Bertsimas, N. Korolko and A. M. Weinstein, Operations Research, 2019.

"Identifying Exceptional Responders in Randomized Trials: An Optimization Approach", D. Bertsimas, N. Korolko and A. M. Weinstein, INFORMS J on Optimization, 2019.

"Dynamic Pricing and Matching in Ride-Hailing Platforms", C. Yan, N. Korolko, D. Woodard, H. Zhu, Naval Research Logistics, 2019.

"The K-Server Problem via Modern Optimization Lens", D. Bertsimas, P. Jaillet and N. Korolko, EJOR, 2018.

"Multiperiod Optimization for Fleet Defense: Centralized and Distributed Approaches", D. Bertsimas, P. Jaillet and N. Korolko, submitted to Operations Research, 2017.

"Robust Optimization of EV Charging Schedules in Unregulated Electricity Markets", N. Korolko, Z. Sahinoglu, IEEE Trans. Smart Grid, 2016.

"Modeling and Forecasting Self-Similar Power Load Due to EV Fast Chargers", N. Korolko, Z. Sahinoglu and D. Nikovski, IEEE Trans. Smart Grid, 2016.

"Sobolev Spaces and Quasiconformal Mappings on Riemannian Manifolds", N. Korolko, S. Vodopyanov, XLIX International Students Conference "Student and Scientific and Technological Advance", 2011, 1st prize

"Composition Operators of Sobolev Spaces on Riemannian Manifolds," N. Korolko, S. Vodopyanov, International Educational Workshop in Geometrical Analysis, Gorno-Altaysk State University, 2010.

Honors

- *The Kuhn Award issued by Naval Research Logistics journal*. Project: "Dynamic Pricing and Matching in Ride-Hailing Platforms"
- Russian Academy of Science Scholarship (Lyapunov), Sobolev Institute of Mathematics
- Baker Hughes Scholarship