GEORGY KALASHNOV

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EDUCATION

Research Fellowship program, Stanford Graduate School of Business   2021-2023
PhD-level courses: Data Mining and analysis (STATS 202), Contracts Information and Incentives (ECON 282), Causal Inference (STATS 361), Convex Optimization I (CME 364A).

Master of Economics, New Economic School   2015 - 2017
Fields: Mechanism Design, Data Analysis

Bachelor of Economics, Moscow State University   2011 - 2015
Fields: Behavioral Economics, Econometrics

RESEARCH

Treatment Allocation under Uncertain Costs, (with Hao Sun, Evan Munro, Shuyang Du, Stefan Wager) 2022
Submitted to Management Science

We consider the problem of learning how to optimally allocate treatments whose cost is uncertain and can vary with pre-treatment covariates. This setting may arise in medicine if we need to prioritize access to a scarce resource that different patients would use for different amounts of time, or in marketing if we want to target discounts whose cost to the company depends on how much the discounts are used. Here, we show that the optimal treatment allocation rule under budget constraints is a thresholding rule based on priority scores, and we propose a number of practical methods for learning these priority scores using data from a randomized trial. Our formal results leverage a statistical connection between our problem and that of learning heterogeneous treatment effects under endogeneity using an instrumental variable. We find our method to perform well in a number of empirical evaluations.

WORK IN PROGRESS

Poisson regression under heterogeneous treatment effects (with Lihua Lei)   2023

We study the properties of Poisson regression under heterogeneous treatment effects as a better choice compared to log-linear regression in many settings. Log-linear regression aggregates multiplicative effects from both large and small subjects with equal weights. However, a more natural way is to give weights proportional to the subject sizes, which is exactly what Poisson regression does. We show a double robust way to estimate a treatment effect in Poisson regression. We also show that a regression on treatment and flexible controls estimates a convex average of the effects in the spirit of Angrist (1998) in the case when the effects are small and average treatment on control, when the effects are large.

Bootstrap procedure to smooth a QINI curve   2022

A way to report a treatment allocation model is to plot the empirical population-average policy effect (PAPE) against the share of treated population (a QINI curve). This is an analog of a ROC curve we have for binary classification problems. Unlike the ROC curve though, the empirical PAPE is quite sensitive to a small change in the number of treated units, which could harm a variety of problems solved with the curve (model comparisons, threshold choice). I show that 1) no smoothing is needed, when the effect enters the policymaker's objective linearly 2) when the value of PATE affects the threshold (e.g. average costs minimization) the treatment rule performance could be boosted with smoothing 3) the QINI curve can be smoothed with bootstrap.

Effect of active labour market policy in Russia during COVID-19 pandemics (with Anna Stanviychuk and Olga Suchkova)   2021
A grant of $10000.

On an exhaustive database of Russian registered unemployment for 5 years (24 mln unemployment cases) we study the effects of labour support measures on the labour market. A high-cost governmental reeducation program decrease the future unemployment registrations of the subject by an economically insignificant amount of -0.142 percentage points (AIPW estimator). For magnitude comparisons, we estimate the effect of staggered lockdown cancels during

COVID-19 pandemics and see an almost 20% reduction in the flow of unemployment registration by the end of the third month (using the method of Chaisemartin, D'Haultfœuille, 2020). We conclude inefficiency of a governmental program

PROFESSIONAL EXPERIENCE

Stanford GSB   2021-2023
Research Assistant   *Stanford, CA*

- Researching ways to put a constraint on a generic machine learning model to align it's output with regulator's preferences (e.g. consider a bank's credit scoring). I found that simple post-projection of the model output on a feasible set does the best job.

- Conducting Python simulations working with a wide range of tools, including Tensorflow, XGBoost, glmnet. My engineering achievements included applying Tensorflow losses to XGBoost model.

- Fine tuning GPT models to perform data analysis tasks

Yandex.Taxi   Feb 2017 - August 2020
Machine learning engineer   *Moscow, Russia*

- Estimating targeting uplift models to design driver subsidies, conducting experiments, evaluating and reporting the quality of the model. The model resulted in a $\approx 30\%$ efficiency increase of a high-cost drivers support program.

- Evaluating the effect of push notifications, conducting encouragement design experiments, designing active marketing policies, managing the product of push notifications. Our main product of price drop notifications resulted in a total market increase of $\approx 1\%$

- Competitive intelligence analytics, searching for different sources of data and combining them. As a result I contributed to the acquisition of Uber business in Russia and CIS countries

Moscow State University   September 2018 - June 2021
Lecturer, Teaching Assistant   *Moscow, Russia*

- Teaching Assistant, Behavioral economics, Fall semester, 2015-2018, 2020
- Lecturer, Applied Econometrics, Fall semester, 2018-2020, Spring semester, 2020-2021
- Lecturer, Microeconomics II, Fall semester, 2019
- Lecturer, Introduction to Data Analysis, Fall semester, 2019-2020

SKILLS

Python: machine learning tools: (scikit-learn, xgboost, tensorflow, pyTorch), oTree, web scraping and visualization tools (beautiful soup, requests, dash)
R: experience with advanced computation frameworks (tidyverse, data.table)
Development tools and techniques: git, package environments, pycharm, slurm scheduling, OOP programming, parallel computations
Latex

HONORS AND EVENTS

Summer School 'Experimental Economics: Purposes, Design, Tools' (EPEE), Participant, 2019
All-Russian competition in economics for high school students, Jury, 2018-2021
Econometrics Game in Amsterdam, Finalist, 2017
Jerusalem school in Network Theory, Participant, 2016
International Statistics Olympiad in Iran, 1-st prize, 2014