IVAN STELMAKH

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RESEARCH INTERESTS

My research interests lie at the intersection of Machine Learning, Behavioral Economics, Game Theory, and Social Sciences. In that, I focus on the principled design of large *human decision-making systems* that form the basis of many applications including hiring, university admissions, and scientific peer review. Despite such systems play a crucial societal role, our understanding of their properties is limited and empirical evidence demonstrates that decisions made in such systems are often inaccurate and biased. With this motivation, in my thesis research, I work on empirical and theoretical fronts to support fair, equitable, and efficient human decision-making at scale.

HIGHLIGHTS

Research

- My research is featured in flagship publication venues including NeurIPS, AAAI, JMLR, and ScienceMag News
- My research has had a significant practical impact: it was employed by ICML, NeurIPS, EC, and other conferences and improved the experience of more than 10,000 researchers

Teaching and Outreach

- I am an editor of the ML@CMU blog which has an audience of more than 100,000 unique readers per year
- I have co-authored a Coursera course on crowdsourcing (top 5% of courses in ML category as of April 2021)
- I am a founding member of the Crowd Science Initiative (https://crowdscience.ai) that connects researchers and practitioners working in the area of crowdsourcing

Service

- I served as a workflow chair of the ICML 2020 conference where I managed efforts of 3,000 reviewers in shaping the program of the conference

EDUCATION

Carnegie Mellon University 2017–Present
Program: Ph.D. in Machine Learning
Advisors: Nihar B. Shah & Aarti Singh
GPA: 4.19 (4.0 scale)

Moscow Institute of Physics and Technology 2013–2017
Program: B.S. in Applied Mathematics and Physics
Advisor: Vladimir Vyugin
Thesis: Adaptive Algorithms for Tracking the Best Experts Trajectory
GPA: 9.3 (10.0 scale)

RESEARCH EXPERIENCE

Student Research Scientist @ Google Research 2021
Team: Seattle NLP
Project: Answering Ambiguous Questions

Research Consultant @ Yandex 2020 – 2021
Team: Toloka
Project: Creating Benchmarks for Crowdsourcing

Research Assistant @ Russian Academy of Sciences 2016–2017
Branch: Institute for Information Transmisson Problems, Russian Academy of Sciences
Project: Adaptive Prediction with Expert Advice

Visiting Research Student @ University of Western Ontario, Canada 2016
Lab: Computer Vision Lab of Yuri Boykov
Project: CT Image Processing and Vascular System Segmentation

Selected Honors and Awards

Co-authored a Coursera course on crowdsourcing (top 5% of courses in ML category as of April 2021)	2021
Invited to the 2021 AAAI Doctoral Consortium	2021
Team in Top-6 (out of more than 40) of the Terminal Live: CMU v. Waterloo AI competition	2020
The Data Open finalist (80 out of more than 5,000 participants reached the final stage)	2020
Citadel East Cost Regional Datathon, 2nd place (out of 25 teams)	2019
Diploma of Higher Education with Honors (GPA in Top 1% at the University)	2017
The Best Student in the Department (The Highest GPA)	2014–2016

Invited Talks

Making Scientific Peer Review Scientific
- Criteo — April 2021

Towards Principled Design of Human Decision-Making Systems
- Crowd Science Seminar — January 2021

On Testing for Biases in Peer Review
- AI Seminar at UWaterloo — December 2019
- EIS Seminar at Carnegie Mellon University — September 2019

PeerReview4All: Fair and Accurate Reviewer Assignment in Peer Review
- ML Seminar at Skolkovo Institute of Science and Technology — March 2019
- AI Lunch at Carnegie Mellon University — December 2018
- Phystech. Reading Room (a series of popular science talks in Moscow, Russia) — September 2018

Tracking the Best Expert Trajectory Using AdaHedge Algorithm
- Learning Theory workshop at Institute for Information Transmisson Problems — November 2016
- Information Technology and Systems conference — September 2016

Publications

[1] Nikita Pavlichenko, Ivan Stelmakh, and Dmitry Ustalov. *Vox Populi, Vox DIY: Benchmark Dataset for Crowdsourced Audio Transcription*. In NeurIPS 2021 Datasets and Benchmarks track. https://arxiv.org/abs/2107.01091.

[2] Ivan Stelmakh, Charvi Rastogi, Nihar B. Shah, Aarti Singh, and Hal Daumé III. *A Large Scale Randomized Controlled Trial on Herding in Peer-Review Discussions*. https://arxiv.org/pdf/2011.15083.pdf.

[3] Ivan Stelmakh, Nihar B. Shah, Aarti Singh, and Hal Daumé III. *Prior and Prejudice: The Novice Reviewers' Bias against Resubmissions in Conference Peer Review*. In CSCW 2021. https://arxiv.org/pdf/2011.14646.pdf.

[4] Ivan Stelmakh, Nihar B. Shah, Aarti Singh, and Hal Daumé III. *A Novice-Reviewer Experiment to Address Scarcity of Qualified Reviewers in Large Conferences*. In AAAI 2021. https://arxiv.org/pdf/2011.15050.pdf.

[5] Ivan Stelmakh, Nihar B. Shah, and Aarti Singh. *Catch Me if I Can: Detecting Strategic Behaviour in Peer Assessment*. In AAAI 2021. https://arxiv.org/pdf/2010.04041.pdf.

[6] Jingyan Wang, Ivan Stelmakh, Nihar B. Shah, and Yuting Wei. *Debiasing Evaluations That are Biased by Evaluations*. In AAAI 2021. https://arxiv.org/pdf/2012.00714.pdf.

[7] Ivan Stelmakh, Nihar B. Shah, and Aarti Singh. *On Testing for Biases in Peer Review*. Spotlight at NeurIPS, 2019. Vancouver, Canada. https://arxiv.org/abs/1912.13188.

[8] Ivan Stelmakh, Nihar B. Shah, and Aarti Singh. *PeerReview4All: Fair and Accurate Reviewer Assignment in Peer Review*. JMLR, short version in ALT 2019. https://arxiv.org/abs/1806.06237.

[9] Vladimir Vyugin, Ivan Stelmakh, and Vladimir Trunov. *Adaptive Algorithm of Tracking the Best Experts Trajectory*. Journal of Communications Technology and Electronics, 2017.

[10] Vladimir Vyugin, Ivan Stelmakh, and Vladimir Trunov. *Tracking the Best Expert Trajectory Using AdaHedge Algorithm (In Russian)*. Information Technology and Systems, 2016. Sochi, Russia.

Scholarships

Advanced State Academic Scholarship (MIPT) 2016–2017
Awarded for research achievements to the 5 best senior students in the department

Phystech Foundation Scholarship 2014–2016
Awarded to the 10 best students in the department

Scholarship of MIPT Academic Council 2014–2016
Awarded to students with only A grades in two consecutive semesters

Industry Experience

Quantitative Researcher @ Citadel Securities 2020
Project: Market Volatility Prediction

Research Assistant @ Yandex 2016–2017
Project: Advertisement Quality Research

Community Service

Founding member of the Crowd Science Initiative (https://crowdscience.ai) 2021
Co-organizer of VLDB 2021 Crowd Science Workshop 2021
Co-organizer of Crowd Science Seminar on crowdsourcing and related areas 2020–Present
Editor of the CMU ML blog 2020–Present
ICML 2020 Workflow Chair 2019–2020
Member of the PhD/Master's Admissions Committee for the CMU Machine Learning Department 2018–2020

Teaching Experience

Teaching Assistant for a Graduate-level AI Course at Carnegie Mellon University Spring 2019
Class: 15-780 Graduate Artificial Intelligence
Instructors: J. Zico Kolter and Nihar B. Shah