Ivan Smirnov

computational social scientist

2022– **Assistant Professor, Business School, University of Mannheim**
I am using AI methods to study biases in social systems and borrow methods from social sciences to understand biases of AI

2020–2021 **Research Fellow, Chair for Computational Social Sciences and Humanities, RWTH Aachen University**

Jan 2018–Sep 2020 **Group Leader, Computational Social Science Group, HSE University, Moscow**
We were using big data and machine learning to understand complex social and psychological phenomena. Our main research focus was on inequality in education and psychological well-being of students.

Dec 2014– Dec 2018 **Research Fellow, HSE University, Moscow**

Education

2018 Ph.D. (cum laude[1]), Higher School of Economics, Moscow
Thesis: Students' differentiation by academic performance on a social networking site

2014 M.Sc. Interdisciplinary Approaches to Life Science, Université Paris Cité

2009 Applied Mathematics and Computer Science, St. Petersburg State University
Specialist degree[2] with a specialization in mathematical statistics

Teaching Experience

University courses

2022/23 WS University of Mannheim
Scientific Programming with Python

2021/22 WS RWTH Aachen
Social Data Science
Master Project (Social Data Science Major)

2021 SS RWTH Aachen
Advanced Scientific Programming with Python
Social Networks
Seminar Data, Algorithms & Society
Master Project (Social Data Science Major)

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[1] In Russia, only one class of honors is used
[2] It is a 5-year degree equivalent to Master

Introduction to Scientific Programming with Python
Seminar Data, Algorithms & Society

2019/20 Higher School of Economics

Big Data and Machine Learning in Educational Research
Introduction to Computational Social Science
Best Course Award based on student evaluations (nomination "Expanding horizons")

2018/19 Higher School of Economics

Introduction to Educational Data Science
Introduction to Computational Social Science

2014 University of Paris

Introduction to Statistics

Thesis Supervision

2022 C. Oprea (Master, RWTH) Determining the impact of toxicity on Wikipedia's talk pages

2021 M. Zubkova (Bachelor, HSE) Understanding the gender pay gap in the online freelance marketplace

2019 M. Gizatullin (Master, HSE) Professional identity development of university students

Other teaching activities

2022 Summer Institute in Computational Social Science

What is computational social science (CSS) really?
How to write a (good!) CSS paper
Potential pitfalls and problems for awesome CSS projects
CSS Research Project

2020—2021 RWTH Aachen

Student advisor for the Master program "Computational Social Systems"

Work Experience

Prior to academia, I worked as a web developer and a technical leader at several startups.

I also worked on various non-profit projects. I was part of the Teach for Russia founding team (6 people) who raised $2M to launch the project, and co-founded Sci.STEPS — a mentorship program for early career researchers.

Languages

English (professional working proficiency), French (DELF B2), Russian (native), German (actively learning)

Programming Languages

Python, R, MATLAB, JavaScript, PHP, C#

Grants, Scholarships, and Awards[3]

2022 Co-organizer, SICSS TU Graz-RWTH from TU GRAZ (€15,000) w/ J. Lasser

2021 Co-organizer, SICSS HSE from SICSS Core Sponsors[4] ($6,450) w/ E. Sivak and S. Dokuka

2020 ~~Co-organizer, SICSS HSE from SICSS Core Sponsors ($10,000)~~ (canceled due to COVID-19)

2020 Russian Foundation for Basic Research grant №20-311-90056 w/ M. Bogdanov (~ $16,000)

2019 PI, Russian Science Foundation grant №19-18-00271 (~ $261,000)

2018 Co-PI, HSE University Basic Research Program grant №31 (~ $47,000)

2016 Key Personnel, Russian Foundation for Basic Research grant №16-06-00916 (~ $26,000)

2016 Institute of Education The Pioneers Award for the Digital Trace project

2014 Advanced Doctoral Program Scholarship, HSE University

2013 SCIRE Foundation Excellence Scholarship

2012 French Government Scholarship

Service

ICA regional conference on Computational Communication Research, 2022
Conference Advisory Committee, Program Committee

The Web Conference / WWW; ICWSM; ACM Transactions of Social Computing; PLOS One; Sage Open; Frontiers in Psychology
Reviewer

Selected Invited Talks

2022 King's College London
Neural word embeddings and gender biases in large corpora

2022 Stanford University
Estimating Educational Outcomes from Students' Short Texts on Social Media

2022 University of Maastricht
Using social media data to understand inequality and segregation in the digital age

2022 TU Graz
Understanding emotional well-being in the digital age

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[3] Russian sums are converted to USD using exchange rates. That might be misleading given that Russian ruble is one of the most underappreciated currencies in the world and that research salaries are substantially lower than in the developed countries

[4] Alfred P. Sloan Foundation, Russell Sage Foundation, Facebook, Social Science Research Council

Selected Conference Talks

IC2S2 — International Conference on Computational Social Science
2017, 2018, 2019, 2020, 2021, 2022

ICWSM — International AAAI Conference on Web and Social Media
2018, 2019

NetSci-X — International Conference on Network Science
2017, 2020, 2021

SocInfo — International Conference on Social Informatics
2017, 2019, 2022

AERA Conference on Educational Data Science
2020

Selected Publications

E Sivak, I Smirnov, & Y Dementeva (2022) Online Social Integration and Depressive Symptoms in Adolescents In *International Conference on Social Informatics* https://doi.org/10.1007/978-3-031-19097-1_21

Dokuka S., Sivak, E., Smirnov, I. (2022) Core but not peripheral online social ties is a protective factor against depression: evidence from a nationally representative sample of young adults, to appear in *Proceedings of NetSci-X Conference* https://arxiv.org/abs/2111.15070

Ahnert G., Smirnov I., Lemmerich F., Wagner C., Strohmaier M. (2021) The FairCeptron: A framework for measuring human perceptions of algorithmic fairness, *Adjunct Proceedings of the 29th ACM Conference on User Modeling, Adaptation and Personalization* https://doi.org/10.1145/3450614.3463291

Smirnov, I., Lemmerich, F., Strohmaier M. (2021) Quota-based debiasing can decrease representation of already underrepresented groups, *Royal Society Open Science* https://doi.org/10.1098/rsos.210821

Bogdanov M., Smirnov I. (2021) Opportunities and limitations of digital traces and machine learning methods in sociology, *Monitoring of Public Opinion: Economic and Social Changes* https://doi.org/10.14515/monitoring.2021.1.1760

Dokuka, S., Smirnov, I. (2020) High academic performance is associated with shorter sleep and later bedtimes for young adults https://arxiv.org/abs/2005.07806

Smirnov, I. (2020) Estimating educational outcomes from students' short texts on social media, *EPJ Data Science* https://doi.org/10.1140/epjds/s13688-020-00245-8

Sivak, E. & Smirnov, I. (2020) Measuring Adolescents' Well-Being: Correspondence of Naïve Digital Traces to Survey Data In *International Conference on Social Informatics* https://doi.org/10.1007/978-3-030-60975-7_26

Bekova, S. & Smirnov, I. (2020) Determinants of doctoral degree aspirations: insights from a nationally representative panel study, *Higher Education in Russia and Beyond* https://publications.hse.ru/en/articles/429127781

Sivak, E. & Smirnov, I. (2019) Parents mention sons more often than daughters on social media, *Proceedings of the National Academy of Sciences* https://doi.org/10.1073/pnas.1804996116

Bochaver, A., Dokuka, S., Novikova, M., Sivak, E., Smirnov, I. (2019) Report on Well-being of children in the digital age *(non peer-reviewed)*

Bochaver, A., Dokuka, S., Sivak, E., Smirnov, I. (2019) Internet Use and Depressive Symptoms in Adolescents: a Review. *Clinical Psychology and Special Education* https://doi.org/10.17759/cpse.2019080301

Smirnov, I. (2019) Schools are segregated by educational outcomes in the digital space, *PLOS One* https://doi.org/10.1371/journal.pone.0217142

Smirnov, I. (2018) Predicting PISA scores from students' digital traces. In *International AAAI Conference on Web and Social Media* https://ojs.aaai.org/index.php/ICWSM/article/view/14996

Smirnov, I., & Thurner, S. (2017) Formation of homophily in academic performance: students change their friends rather than performance, *PLOS One* https://doi.org/10.1371/journal.pone.0183473

Smirnov, I. (2017) The digital Flynn effect: complexity of posts on social media increases over time. In *International Conference on Social Informatics* https://doi.org/10.1007/978-3-319-67256-4_3

Polivanova K., & Smirnov, I. (2017) What is in my profile? Understanding the interests of modern adolescents through VKontakte data, *Educational Studies* https://doi.org/10.17323/1814-9545-2017-2-134-152

Smirnov, I. (2017) Identifying factors associated with the survival and success of grassroots educational innovations, In *Reforms and innovation in education* https://doi.org/10.1007/978-3-319-60246-2_6

Smirnov, I., Sivak E., Kozmina Y. (2016) In search of lost profiles: the reliability of VKontakte data and its importance for educational research, *Educational Studies* http://doi.org/10.17323/1814-9545-2016-4-106-122