

OLGA KUZNETSOVA

www.okuznetsova.com

EDUCATION

- 08.2019 – present **Aalto University School of Science, Helsinki, Finland**
PhD Candidate in Mathematics and Statistics
- Topic: Non-linear optimisation: certification of optimality using algebraic methods
 - Advisor: Prof. Kaie Kubjas
 - Personal encouragement grant from the Emill Aaltonen Foundation worth 5000 EUR (2021)
 - SIAM student travel grant (2019, 2021)
- 08.2017 – 06.2019 **Aalto University School of Science, Helsinki, Finland**
MSc in Mathematics and Operations Research (with distinction)
- 01-08.2017 Pre-degree coursework in mathematical methods, abstract algebra, analysis and topology
 - GPA: 4.8/5.0,
 - Thesis “Private Information Retrieval: Combinatorics of the Star-Product Scheme” – grade 5.0/5.0. Supervisor – Prof. Camilla Hollanti, advisor – Dr. Ragnar Freij-Hollanti
- 08.2017 – 06.2019 **Aalto University School of Science, Helsinki, Finland**
MSc in Mathematics and Operations Research (with distinction)
- 10.2015 – 12.2016 **London Business School, London, UK**
Graduate Coursework in Management Science and Operations
- 09.2007 – 07.2011 **Aalto University School of Business, Helsinki, Finland**
BSc/MSc in Information and Service Management
CEMS Masters in International Management

PUBLICATIONS

PUBLISHED

1. **Information Hiding Using Matroid Theory.** With Ragnar Freij-Hollanti [Advances in Applied Mathematics: 129](#)
2. **Computing Maximum Likelihood Estimates for Gaussian Graphical Models with Macaulay2.** With Carlos Amendola, Luis David García-Puente, Roser Homs, Harshit J. Motwani [arXiv:2012.11572](#) to appear in the *Journal of Software for Algebra and Geometry*
3. **Exact Solutions in Log-Concave Maximum Likelihood Estimation.** With Alexandros Grosdos, Alexander Heaton, Kaie Kubjas, Georgy Scholten, Miruna-Stefana Sorea [Advances in Applied Mathematics: 143](#)

SUBMITTED

1. **Combinatorial Derived Matroid.** With Ragnar Freij-Hollanti and Relinde Jurrius [arXiv:2206.06881](#)
2. **Log-concave Density Estimation in Undirected Graphical Models.** With Kaie Kubjas, Elina Robeva, Pardis Semnani and Luca Sodomaco [arXiv:2206.05227](#)
3. **Algebraic degree of optimization over a variety with an application to p-norm distance degree.** With Kaie Kubjas and Luca Sodomaco [arXiv:2105.07785](#)

ACADEMIC CONFERENCES

INVITED TALKS

- 2022 British Applied Mathematics Colloquium (BAMC) – best student talk
28th Nordic Congress of Mathematicians. Session “Applied Algebra” (Helsinki, Finland – August 2022)
- 2021 Finnish AI Day (online - November 2021)
SIAM Conference on Applied Algebraic Geometry 2021. Minisymposium “Algebraic Geometry of Data” (online– August 2021)

CONTRIBUTED TALKS

- 2021 SIAM Conference on Applied Algebraic Geometry 2021. Contributed Presentations Session “Applied Algebraic Geometry III” (online – August 2021). Talk
- EMS/EWM Mittag Leffler virtual school “Tropical moduli spaces” (online – July 2021). Talk
- MEGA 2021: Effective Methods in Algebraic Geometry (online – June 2021). Second place poster award
- 2020 Workshop “Geometry of curves in time series and shape analysis” (online, organized by Max Planck Institute for Mathematics in the Sciences, Leipzig, August 2020). Poster
- 2019 Summer School on Geometric and Algebraic Combinatorics (Paris, France, June 2019). Poster
- 2018 Number theory and coding theory: Contemporary applications in security (Turku, Finland – May 2018). Talk
- ECCO 2018: The Colombian Meeting on Combinatorics (Barranquilla, Colombia – June, 2018). Talk
- Summer School on Numerical Computing in Algebraic Geometry (Leipzig, Germany – August, 2018). Poster
- Summer School in Algebraic Statistics (Tromso, Norway – September 2018). Talk

ATTENDANCE

- 2020 Macaulay2 Workshop (online, May, 2020)
- 2019 SIAM Conference on Applied Algebraic Geometry 2019 (Bern, Switzerland) – Received SIAM Student Travel Award
- 2018 Munich Workshop on Coding and Cryptography 2018 (Munich, Germany - April 2018)
- ASGARD Math 2018: Real Algebraic Geometry and Tropical Mathematics (Oslo, Norway - May, 2018)
- Nordfjordeid Summer School 2018: Combinatorics and Hodge Theory (Nordfjordeid, Norway – June, 2018)
- Young Topologists Meeting 2018 (Copenhagen, Denmark – July, 2018)
- 2017 Connections for Women Workshop: Geometric and Topological Combinatorics (Mathematical Sciences Research Institute, Berkeley, CA)

SERVICE

Broker of Humanitarian Aid to Ukraine at UA Brokers without Borders ry

UA Brokers Without Borders is an international non-profit initiative, run by Ukrainians living abroad but carrying Ukraine in their hearts. It was created in February 2022 in response to the humanitarian disaster in Ukraine, resulting from the Russian aggression. We focus on urgent, grassroot humanitarian projects for Ukraine. Our impact to date:

- More than 600,000 euros worth of medical equipment for Ukrainian hospitals (patient monitors, mobile x-ray machines, artificial lung ventilators, VAC devices and ultrasound devices)
- 20+ pallets of medications
- Collected ca. 155K Eur cash donations and micro grants for Ukrainian NGOs
- Setup a vast network of organizations united around the same mission

Standing Committee of the European Women in Mathematics (2018-2022)

- Website (manage a team of 4 volunteers and relations with developers)
- Fundraising
- Strategy review

IT SKILLS

Git, Macaulay2, Mathematica, MATLAB, Maple, R, Stata, Python

PROJECT MANAGEMENT EXPERIENCE

2021 - 2022

Strategy Development for the European Women in Mathematics

Initiated and coordinated a series of workshops among the members of the Standing Committee to develop a 2-year strategic plan. This was the first time strategy was formally reviewed since the founding of the organisation in 1986.

2021

Fundraising for the European Women in Mathematics

Initiated a fundraising campaign and raised 10 000 EUR worth corporate donations. Developed the fundraising strategy and marketing materials. Coordinated the efforts of a team of 4 volunteers.

- 2018-2021 **IT Transformation for the European Women in Mathematics**
 Developed and implemented the strategy to improve internal processes by using better IT tools for marketing, communication and membership management. Found and managed a reliable IT development partner. Managed a team of 5 volunteers and collaborated with other internal and external stakeholders. Managed transition to the GDPR.
- 2015-2016 **Launch of www.kapsula.com.ua**
 Kapsula is a leading Ukrainian fashion webstore. Together with two partners developed the concept and launched the webstore. Led IT and strategy.
- 2015 **Startup crowdfunding**
 Fundraised 150 000 GBP on Crowdcube for a startup. Raised the majority of funding through personal sales to high-net-worth individuals. Developed the fundraising strategy.

WORK EXPERIENCE

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|-------------------|---|---------------------------|
| 06.2017 - 08.2017 | AALTO UNIVERSITY SCHOOL OF SCIENCE
Research Assistant | Finland/UK |
| 01.2014 – 09.2015 | SELF-EMPLOYED
Entrepreneur/ Management Consultant | Finland/UK/Ukraine |
| 10.2011 – 01.2014 | MCKINSEY & CO
Management Consultant | Finland |
| 09.2009 – 08.2010 | FINNISH TAX ADMINISTRATION
Researcher | Finland |
| 06.2008– 12.2008 | SYNOCUS OY
Project Assistant | Finland |

LANGUAGES

Russian (native), English (fluent), Finnish (fluent), Spanish (upper-intermediate)