NIKOLA HRISTOV KONSTANTINOV

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EDUCATION

04.2022 –   **ETH Zurich AI Center: Postdoctoral fellow**
- Supervisors: Prof. Martin Vechev and Prof. Fanny Yang
- Research focus: *Trustworthy Machine Learning*

2017 – 03.2022   **IST Austria (ISTA): PhD Student;** Member the **ELLIS PhD Program**
- Supervisor: Prof. Christoph H. Lampert
- Thesis: *Robustness and Fairness in Machine Learning*

2013 – 2017   **University of Oxford: Master in Mathematics and Statistics, Grade: 1.1**
- Master Thesis: *"Kernel Dependence Measures for Unsupervised Learning"* with supervisor Prof. Dino Sejdinovic
- Focus on Probability Theory, Stochastic Analysis, Statistics

2005 – 2013   **Sofia High School of Mathematics**
- Bulgarian High School Diploma, grade 5.99 out of 6
- Extracurricular classes in Mathematics, Informatics and English

INTERNSHIPS AND ACADEMIC VISITS

Spring of 2021   **University of Milan, Italy: ELLIS PhD Exchange Visit (3 months)**
- Host: Prof. Nicolò Cesa-Bianchi
- Studying models for online learning from multiple unreliable data sources

Summer of 2019   **Amazon.com, Berlin, Germany: Applied Research Internship (3 months)**
- Group: Intelligent Cloud Control; Mentor: Paul Vazquez
- Evaluation and model comparison of predictive models for cloud computing

Summer of 2016   **ATASS Sports, Exeter, UK: Research Internship (7 weeks)**
- Statistical modelling for sports prediction
- Experience in statistical programming with R and manipulating large datasets

Summer of 2015   **IST Austria: Research Internship (11 weeks)**
- Supervisor: Prof. Nick Barton
- Mathematical models of evolution: quantifying the effects of various genetic phenomena on spatially extended populations

PAPERS

Preprints

1. Eugenia Iofinova[♯], **N. K.**[♯], Christoph H. Lampert: FLEA: Provably Fair Multisource Learning from Unreliable Training Data
Arxiv: https://arxiv.org/abs/2106.11732; ♯ **Equal contribution**

2. **N. K.**, Christoph H. Lampert: Fairness Through Regularization for Learning to Rank
Arxiv: https://arxiv.org/abs/2102.05996

Publications

1. **N. K.**, Christoph H. Lampert: Fairness-Aware PAC Learning from Corrupted Data
In: Journal of Machine Learning Research **(JMLR)**

2. **N. K.**, Christoph H. Lampert: On the Impossibility of Fairness-Aware Learning from Corrupted Data
In: **AFRC@NeurIPS workshop**, 2021; **Contributed talk**

3. **N. K.**, Elias Frantar, Dan Alistarh, Christoph H. Lampert: On the Sample Complexity of Adversarial Multi-Source PAC Learning
In: *International Conference on Machine Learning* **(ICML)**, 2020

4. **N. K.**, Christoph H. Lampert: Robust Learning from Untrusted Sources
In: *International Conference on Machine Learning* **(ICML), Long Talk,** 2019

5. Dan Alistarh, Torsten Hoefler, Mikael Johansson, **N. K.***, Sarit Khirirat, Cedric Renggli: The Convergence of Sparsified Gradient Methods
In: *Conference on Neural Information Processing Systems* **(NeurIPS)**, 2018

6. Dan Alistarh, Chris De Sa, **N. K.***: The Convergence of Stochastic Gradient Descent in Asynchronous Shared Memory
In: *ACM Symposium of Principles of Distributed Computing* **(PODC)**, 2018
* Alphabetic order

AWARDS AND SCHOLARSHIPS

Academic	- *PODC student travel award*, SIGOPS, 2018 - *Davies Prize for MMath Part C*, Jesus College, Oxford, 2017 - *Department of Statistics Prize for MMath Part A*, Oxford, 2015 - *Open Scholarship*, Jesus College, Oxford – 3 awards (2014-2016) - *Bulgarian National Scholarship* for gifted students – 4 awards (2008 – 2011)
Olympiads	- 20th international "DUEL" competition 2012 (Czech Republic): *First place* - Princeton University Mathematical Competition 2011, Power Round (Team Project): *Third Place* - Junior Balkan Mathematical Olympiad 2008: *Bronze medal*

SKILLS

IT skills	**Experienced with:** Python, Tensorflow, NumPy, R, LaTeX, Ubuntu **Have worked with:** C++, Matlab, HTML, Mathematica
Languages	**Fluent:** English, Bulgarian; **Conversational:** German, Russian

MISCELLANEOUS

External talks	- February 2022: ETH AI Center Postdoctoral Symposium (online) - December 2021: Guest lecture at ETH course on Trustworthy ML (online) - May 2021: GILT seminar series, University of Milan
Reviewing	- NeurIPS (2021-), ICML (2021-), ICLR (2021-), AISTATS (2022)
Teaching	**IST Austria: Teaching Assistant** - 02.2020 – 04.2020: *Formal Methods for Learned Systems* - 11.2018 – 01.2019: *Deep Learning with Tensorflow* - 10.2018 – 11.2018: *Statistical Machine Learning*
Responsibilities	**IST Austria: ML meetup organizer** - 2020 – 2021: Organizing a reading group for the ML students at IST Austria **IST Austria: Student representative in Data Science** - 2018 – 2020: Representing Data Science students at IST; providing feedback about related postgraduate courses; welcoming first-year Data Science students **Oxford University Bulgarian Society** - 2015 – 2016: *President* – organising weekly talks, film nights, joint meetings

with other university societies; maintaining the society's website
- 2014 – 2015: *Secretary* – communicating with members and applicants

Summer Schools	**Machine Learning Summer School (MLSS), Madrid 2018** - Two weeks of talks about various areas of machine learning, taught by world-leading experts in the respective fields
Hobbies	**Sports:** running, bouldering, squash, (table) tennis; **Others:** reading fiction