

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
Accepted to: 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

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| Academic | <ul style="list-style-type: none"> - <i>PODC student travel award</i>, SIGOPS, 2018 - <i>Davies Prize for MMath Part C</i>, Jesus College, Oxford, 2017 - <i>Department of Statistics Prize for MMath Part A</i>, Oxford, 2015 - <i>Open Scholarship</i>, Jesus College, Oxford – 3 awards (2014-2016) - <i>Bulgarian National Scholarship</i> for gifted students – 4 awards (2008 – 2011) |
| Olympiads | <ul style="list-style-type: none"> - 20th international “DUEL” competition 2012 (Czech Republic): <i>First place</i> - Princeton University Mathematical Competition 2011, Power Round (Team Project): <i>Third Place</i> - Junior Balkan Mathematical Olympiad 2008: <i>Bronze medal</i> |

SKILLS

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| 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

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|------------------|---|
| External talks | <ul style="list-style-type: none"> - 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, 2022), ICLR (2021, 2022), AISTATS (2022) |
| Teaching | IST Austria: Teaching Assistant <ul style="list-style-type: none"> - 02.2020 – 04.2020: <i>Formal Methods for Learned Systems</i> - 11.2018 – 01.2019: <i>Deep Learning with Tensorflow</i> - 10.2018 – 11.2018: <i>Statistical Machine Learning</i> |
| Responsibilities | IST Austria: ML meetup organizer <ul style="list-style-type: none"> - 2020 – 2021: Organizing a reading group for the ML students at IST Austria IST Austria: Student representative in Data Science <ul style="list-style-type: none"> - 2018 – 2020: Representing Data Science students at IST; providing feedback about related postgraduate courses; welcoming first-year Data Science students Oxford University Bulgarian Society <ul style="list-style-type: none"> - 2015 – 2016: <i>President</i> – 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, yoga, (table) tennis; **Others:** reading fiction