Curriculum Vitae Nikolas Kirschstein

ML Student

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Education

10/2023 – present **MSc Informatics** Technical University of Munich, DE
Current grade: **1,2** (= Distinction)

10/2022 – 06/2023 **MSc Mathematical Sciences** University of **Oxford**, UK
Final grade: **Distinction** | rank 4/45 in cohort of 2023

10/2018 – 03/2022 **BSc Mathematics, BSc Computer Science** Universität Passau, DE
Final grade: **1,0** (= Distinction) | top 2% across cohorts 2003 to 2022

Publications

2024 **ICML Conference Paper** International Conference on Machine Learning (**ICML**)
Published ↗ full conference paper based on my MSc thesis [↗ Paper] [↗ GitHub]

2022 **ECML PKDD Conference Paper** European Conference on ML (ECML PKKD)
Published ↗ full conference paper based on my BSc thesis [↗ Paper] [↗ GitHub]

Research Experience

2024 **Research Project (Transformers & ODEs)** Technical University of Munich, DE
How Transformers Speak: An Interacting Multi-Particle System Perspective [↗ GitHub]

2024 **Coursework (Game Theory & Reinforcement Learning)** UNSW Sydney, AU
Game-Theoretic Multi-Agent Reinforcement Learning [↗ Essay]

2024 **Practical Project (Reinforcement Learning)** Technical University of Munich, DE
Factory Manipulation with Cooperative Multi-Agent Reinforcement Learning [↗ Report] [↗ GitHub]

2023 **MSc Thesis (Spectral Graph Theory)** University of Oxford, UK
Flood Forecasting with Graph Neural Networks [↗ Thesis] [↗ GitHub]

2023 **Research Project (Geometric Deep Learning)** University of Oxford, UK
Attraction-Repulsion Dynamics versus Homophily in GNNs [↗ Paper] [↗ GitHub]

2022 **Research Project (Computer Vision)** University of Oxford, UK
Noise Schedules for Diffusion Probabilistic Models [↗ Paper] [↗ GitHub]

Work Experience

06/2023 – 09/2023 **Machine Learning Engineer Intern** **Google**, California & New York, US
Explored generative AI methods for automatically creating meaningful videos from lower-modality assets (text, voice, music, images); presented prototype at internal event ”Beakers & Breakthroughs” with high visibility; programming in Python

05/2022 – 08/2022 **Software Engineering Intern** **Google**, San Francisco, US
Designed, implemented, and tested a new addressing scheme for a specific type of cloud resource; led a strategy meeting on authorisation design decisions after having investigated viable approaches; presented and demonstrated my feature to the vice presidents of Google Cloud Security; volunteered to organise social intern events; programming in Java

08/2018 – 04/2022 **Self-employed Web Developer** Ingolstadt, DE
Developed brand websites and WordPress plugins as a service of my own company, usually in partnership with the marketing agency *Agentur brand-kommunikation*

Relevant Skills

Programming	Python, Java, C/C++, Haskell, Prolog, MATLAB, SQL, PHP, JavaScript
Machine Learning	PyTorch, TensorFlow, Huggingface, Stable Baselines 3, sklearn, pandas, Jupyter, WandB
s/w engineering	Git, JetBrains IDEs, Maven, JUnit, Mockito, Selenium, Espresso, Cucumber
Research	LaTeX, Overleaf, Zotero, Ideation, Teamwork, Presentation

Teaching Experience

10/2021 – 10/2021 **Mathematics Tutor** Chair of Applied Mathematics, Universität Passau, DE
Led a one-week maths bridging course for ~15 freshers
- Taught principles of rigorous maths to facilitate the transition from school to university
- Coached the students individually during embedded regular exercise sessions
- Reworked and extended the existing material (lecture notes and problem sheets)

04/2020 – 02/2021 **Teaching Assistant** Chair of Theoretical Computer Science, Universität Passau, DE
...for the lectures "Algorithms and Data Structures" and "Theoretical Computer Science"
- Marked weekly problem sheets and the endterm exams
- Discussed solution expectations and the assessment standard with the lecturers
- Reviewed common mistakes and misconceptions to optimise teaching emphases

Scholarships

11/2020 – present **Studienstiftung Scholarship** Studienstiftung des deutschen Volkes
"The Studienstiftung supports young people with outstanding talents who can be expected to make an exceptional contribution to society." [↗ Website]

10/2018 – present **Max Weber Programme** Bavarian State Ministry of Science and the Arts
Scholarship from the state of Bavaria for talented students in tertiary education

11/2022 – 06/2023 **Joan Protheroe Choral Scholarship** University of Oxford, UK
Recognition of musical talent and commitment to the Lincoln College Chapel Choir

10/2022 – 06/2023 **DAAD Fellowship** German Academic Exchange Service (DAAD)
Comprehensive funding for my abroad MSc at Oxford

Volunteering

11/2023 – present **Board Member** Unichor München, DE
Organising rehearsal weekends for >200 participants

04/2020 – 04/2022 **Student Representative** FSinfo Student Committee, Universität Passau, DE
- Represented the student body as full voting member in two professorship appointment committees (*AI Engineering* and *Discrete Mathematics*, from Bavarian Hightech Agenda)
- Directed the personal mentoring programme for freshers three times
- Led a successful task force for resolving admin and didactic issues of a lab course
- Negotiated with local businesses for eco-friendly contributions to the fresher goody bags
- Advised students on individual questions and issues during weekly consultation hours

10/2020 – 09/2021 **Conference Organiser** Universität Passau, DE
Organised and co-moderated the ↗ student conference within the 2021 joint meeting of the German and Austrian Mathematical societies DMV and ÖMG in Passau

04/2020 – 03/2022 **Technology Appointee** Student Choir of Passau, DE
- Developed, administered, and maintained the ↗ choir website, server, and mailing list
- Built a digital tracking system with QR codes for pandemic-proof choir rehearsals
- Cut, mixed, and published recordings of the semester closing concerts

03/2020 – 07/2020 **On-call Social Worker** Bavarian Red Cross (BRK), Ingolstadt, DE
Shopped groceries on behalf of quarantined and high-risk individuals during the first COVID-19 wave without compensation

Interests

Sports Latin & Ballroom dancing (Goldstar badge), partner climbing (lead climbing certificate)
Music Classical guitar (17 years), electrical guitar (8 years), piano (currently teaching myself), singing in classical choirs (5 years) and barbershop quartets, being the campfire guitarist
Games Strategy-heavy board games, card games, group games