JULIA KOSTIN

EDUCATION

Technical University of Munich Oct 2020 - Present
TopMath: Elite Master's and Doctoral Programme in Mathematics (Current grade 1.06/1.00)
Research-oriented fast-track graduate program including 15 ECTS in independent research
Relevant coursework: Stochastic Processes, Gaussian Processes in Machine Learning, Deep Learning, Foundations of Data Analysis, Mathematical Statistics, Introduction to Digital Signal Processing
Master's thesis (ongoing): Robustness Guarantees for Low-rank Matrix Recovery with Adversarial Noise

Ludwig Maximilian University of Munich
BSc Mathematics (Final grade: 1.01/1.00) Oct 2017 - Aug 2020
Bachelor thesis: Construction of Orthonormal Wavelet Systems (with Prof. Peter Müller)
Minor subject (30 ECTS): Biology. Additional 21 ECTS in theoretical physics.
BSc Biology Oct 2016 - Oct 2017
Focus on dynamical systems and computational neuroscience. Transferred to BSc in Mathematics in 2017

PROFESSIONAL EXPERIENCE

Technical University of Munich Munich, Germany
Research Assistant Jul 2022 - Present
- Conducted research on **robustness of inverse problems** under adversarial noise under supervision of **Prof. Felix Krahmer**
- **Developed improved bounds** for the reconstruction error of low-rank matrices under adversarial noise
- Coauthor of preliminary results presented at the conference **Mathematics of Complex Data** in Stockholm
- Part of the DFG-funded Priority Program **Theoretical Foundations of Deep Learning** (FoDL)
- Member of the **Munich Center for Machine Learning** (MCML)

Fraunhofer Institute for Integrated Circuits IIS Erlangen, Germany
Student Researcher Nov 2020 - Jun 2022
- Worked in a team of three on **neural network models for speech extraction** under supervision of **Prof. Emanuël Habets**
- Adapted and trained DNNs for **brain-informed speaker extraction** on **electroencephalography data** in PyTorch
- Implemented EEG-driven classifiers of talker identity and speech direction in Python and MATLAB
- Coauthor of the talk "Decoding attended talker solely from listening-state EEG signals" presented at the **VoiceID 2022** conference in Zurich

LMU Mathematical Institute Munich, Germany
Tutor in Advanced Calculus, Measure Theory and Integration Apr 2019 - Aug 2020
- Taught weekly classes, developed solutions to problem sheets, graded assignments and exams over 3 semesters

Bernstein Center for Computational Neuroscience Munich, Germany
Student Researcher Sep 2017 - Oct 2018
- Conducted research on neural mechanisms of spatial orientation in a team of two under supervision of **Prof. Andreas Herz**
- Investigated the role of bursts in grid cell spike trains using generalized linear models
- Performed data analysis of spike trains and grid cell firing fields in Python and MATLAB

PUBLICATIONS

Mohamed Elminshawi, Julia Kostina, Neeraj Kumar Sharma, and Emanuël Habets. ***"Attended Talker Decoding Exclusively From Listening-State EEG".*** 2022. [Submitted]

CONFERENCE TALKS AND POSTERS

KU-LMU-TUM Joint Seminar on Mathematics of Data Science Munich, Germany
- Presented results in the talk "Robustness Guarantees for Blind Deconvolution via Nuclear Norm Minimization" Nov 2022

Approximation and Geometry in High Dimensions 2022 Bedlewo, Poland
- Presented results in the talk "Robustness Guarantees for Low-rank Matrix Recovery with Adversarial Noise" Oct 2022

Bernstein Conference for Computational Neuroscience 2018 Berlin, Germany
- Poster "Differentiating Temporal Aspects of Grid-Cell Activity with Generalized Linear Models" Sep 2018

2017 Amgen Scholars Europe Symposium Cambridge, UK
- Poster "Exploring Grid Cell Spiking with a Generalized Linear Model" Sep 2017

PROJECTS AND SUMMER SCHOOLS

Lisbon Machine Learning School 2022 Lisbon, Portugal
• Completed assignments, participated in discussions on natural language processing, sequence models and causality Jul 2022

Science Hack 2021 Munich, Germany
• Infineon Radar Challenge: Developed best-performing traffic object classifier from radar data in a team of 5 Apr 2021

Utrecht Summer School on Dynamical Systems Utrecht, Netherlands
• Completed a MATLAB simulation of delay differential equations in a team of two Jul 2019

Amgen Scholars Programme Munich, Germany / Cambridge, UK
Research Intern in Computational Neuroscience Jun 2017 - Sep 2017
• Modelled stochastic behavior of space-modulated neurons in Python and MATLAB
• Mentor of the 2022 Munich Amgen cohort

AWARDS

Max Weber Scholarship for gifted students Apr 2018 - present
• Received financial and educational support based on academic merit and extracurricular activities
• Co-organized the Mathematical Symposium for scholars and mentors
• Participated in multiple soft skill seminars and summer schools, including "Multivariate Approximation with Radial Basis Functions"

VOLUNTEERING

Corona School e.V. Sep 2020 - Apr 2021
• Tutored students from disadvantaged backgrounds during the online school period of the coronavirus pandemic

Peer-to-Peer Mentoring LMU Nov 2020 - Apr 2021
• Assisted three first semester students in mathematics with their start at university

SKILLS

Programming experience	Python (incl. PyTorch, TensorFlow), MATLAB, R, C++
Languages	German (native), Russian (native), English (TOEFL iBT 120/120)