

NADEZHDA ILIEVA

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Education

Ph.D. Computer Science

Nov 2025 – Nov 2029

University of Basel · Optimization for Machine Learning Systems Group

Supervised by Prof. Aurelien Lucchi and Prof. Antonio Orvieto

M.Sc. Communication Systems

Sep 2022 – Aug 2025

EPFL (École polytechnique fédérale de Lausanne) · GPA: 5.60/6.00

Courses: Machine Learning, Applied Data Analysis, Information Security and Privacy, Mobile Networks

B.Sc. Telecommunication and Information Engineering

Oct 2018 – Jul 2022

Ss. Cyril and Methodius University in Skopje · GPA: 9.71/10.00

Experience

Machine Learning Research Intern

Feb 2025 – Aug 2025

Swisscom

Lausanne, Switzerland

- Develop deep learning models to identify performance patterns in augmented mobile cell footprint images.

Student Teaching Assistant

Sep 2024 – Feb 2025

EPFL (École polytechnique fédérale de Lausanne)

Lausanne, Switzerland

- Assisted in CS-433 Machine Learning course with 500+ enrolled students, by providing support during exercise sessions, and contributing to assignment grading.

Research Intern

Feb 2024 – Aug 2024

Sony Europe

Stuttgart, Germany

- Formulated and proposed solutions to resource allocation problems in IEEE 802.11 wireless networks utilizing methods from mathematical optimization.

Research Assistant

Sep 2022 – Sep 2023

Security and Cryptography Laboratory (LASEC) - EPFL

Lausanne, Switzerland

- Developed and optimized biometric authentication methods, analyzed biometric data, and conducted experiments to support research objectives under the guidance of Prof. Serge Vaudenay.

Mathematics Olympiad Teacher

Nov 2020 – May 2024

Educational Center Zbir

Skopje, North Macedonia

- Designed problem sets and delivered lessons to students preparing for national and international mathematics competitions.

Honors and awards

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|---|---|
| • International Mathematical Olympiad 2018 HM, 2017 HM, 2016 Participation | • Asian Pacific Mathematics Olympiad 2018 Bronze, 2017 HM |
| • European Girls' Mathematical Olympiad 2018 Bronze, 2017 HM, 2016 Participation | • Iranian Geometry Olympiad 2017 HM, 2016 Bronze Ruler |
| • Balkan Mathematical Olympiad 2018 Bronze, 2017 HM | • Mediterranean Mathematics Competition 2018 Silver, 2017 Silver |

Projects

Spectral Properties of Neural Network Architectures and Optimization | *Python*

Sep 2024 – Jan 2025

- Developed scalable estimation methods for the Hessian matrix and its eigenvalues in neural network architectures.
- Analyzed properties of the optimization landscapes.

Road Segmentation from Satellite Images | *Python*

Oct 2023 – Dec 2023

- Developed a deep learning model for road segmentation from satellite images.
- Ranked first on the CS-433 Machine Learning AICrowd challenge leaderboard (out of 50+ teams).

SecretStroll | *Python***Apr 2023 – May 2023**

- Implemented a privacy-preserving authentication mechanism based on the Pointcheval-Sanders attribute-based credential scheme with non-interactive knowledge proofs using the Fiat-Shamir heuristic.
- Evaluated the system's privacy by designing a deanonymization attack and proposed a defence strategy using spatial obfuscation.
- Performed a fingerprinting attack on network traffic metadata using a Random Forest classifier.

SMCompiler | *Python***Feb 2023 – Mar 2023**

- Implemented a secure multiparty computation (SMC) protocol with arithmetic circuits based on additive secret sharing.
- Evaluated the performance and proposed an application scenario.

Semidefinite Relaxation of Quadratic Optimization Problems | *MATLAB***Feb 2022 – Jul 2022**

- Studied and applied the method of Semidefinite Relaxation on Maximum Likelihood detection in MIMO systems.
- Implemented and conducted performance comparisons between SDR detectors with eigenvector approximation/randomization and a ZF detector.

Skills

Programming Languages: Python, MATLAB, Java**Spoken Languages:** Macedonian (native), English (fluent), Serbian (fluent), French (elementary), German (elementary)