

Lazar Milikic

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EDUCATION

EPFL

PhD in Computer Science

EDIC Doctoral Program; Doctoral Assistant, Laboratory for Automated Reasoning and Analysis.

Lausanne, Switzerland

Nov 2025 – Present

EPFL

Master of Science

Major in Computer Science (GPA: 5.86/6.00)

- EPFL Excellence Fellowship recipient (awarded to the top 3% of students).
- Relevant coursework: Machine Learning, Deep Learning, Computer Vision, Modern NLP, Reinforcement Learning, Intelligent Agents, Deep Learning for Autonomous Vehicles, Applied Data Science, Distributed Algorithms.

Lausanne, Switzerland

Sep 2022 – Sep 2025

École Polytechnique

Bachelor of Science

Major in Mathematics and Computer Science (GPA: 4.16/4.00)

- Graduated summa cum laude; Excellence Scholarship (awarded to the top 5% of students); 5 outstanding distinctions.
- Relevant coursework: Object-Oriented Programming in C++, Design and Analysis of Algorithms, Machine Learning, Constrained Logic Programming, Compilers, Numerical Optimization, Asymptotic Statistics.

Palaiseau, France

Sep 2019 – Jun 2022

PUBLICATIONS AND KEY PROJECTS

- **VLD: Vision–Language Distance for Goal-Conditioned Navigation** (*Authors:* L. Milikic, M. Patel, and J. Frey): Introduced a scalable vision–language distance learning framework for goal-conditioned navigation that decouples perception from control. Trained a self-supervised temporal distance model on $\sim 3,000$ hours of video data and plugged it into independently trained RL policies as a drop-in replacement for privileged simulator distances, outperforming prior distance models and state-of-the-art Habitat image-based navigation baselines on sim-to-real transfer. Submitted to ECCV 2026 (under review). [Link](#).
- **GraalNN: Context-Sensitive Static Profiling with Graph Neural Networks** (*Authors:* L. Milikic, M. Cugurovic, V. Jovanovic): Developed GraalNN, a GNN-based, context-sensitive static profiling framework for the Graal Native Image compiler, achieving a 10.13% runtime speedup on industry-standard benchmarks and a 3.7% throughput gain on real-world microservices. Published in CGO 2025. [Link](#).
- **Exploring Defeasibility in Causal Reasoning** (*Authors:* S. Cui, L. Milikic, Y. Feng, M. Ismayilzada, D. Paul, A. Bosselut, and B. Faltings): Designed CESAR, a new BERT-based causal strength metric that outperformed existing metrics (ROCK, CEQ) by over 50% on our newly introduced δ -CAUSAL benchmark for defeasible causal reasoning. Published in ACL 2024. [Link](#).
- **Mining Effective Strategies for Climate Change Communication** (*Authors:* A. Suresh, L. Milikic, F. Murray, Y. Zhu, and M. Grossglauser): Built interpretable machine learning models to rank climate change tweets by engagement, showing that tweets focused on mitigation and adaptation receive more attention. Published in ICLR 2023 Workshop. [Link](#).
- **A Static Analysis Framework for Data Science Notebooks** (*Authors:* P. Subotic, L. Milikic, and M. Stojic): Created a framework for static analysis of data science notebooks that models their unique execution semantics and detects issues such as data leakage. Published in ICSE 2022. [Link](#).
- **Knowledge Graph Dynamics:** Explored propagation dynamics in evolving knowledge graphs, showing that structural updates primarily affect local entity embeddings and preserve knowledge retention under graph evolution. Part of an ongoing graph dynamics initiative at EPFL’s LIA lab.
- **Vision Is All You Need:** Proposed a vision-only approach to autonomous drone navigation using a novel Transformer-based Drone Dynamics Module to estimate the dynamics of observable objects. [Link](#).
- **Handwritten Equation Solver:** Led a team of 13 students to build a C++ program that recognizes handwritten equations with a trained machine learning model and solves them algorithmically. [Link](#).

RESEARCH AND WORK EXPERIENCE

Robotics Systems Lab, ETH Zurich

Student Researcher

Zurich, Switzerland

Mar 2024 – Nov 2025

- Developed Vision–Language Distance (VLD), a large-scale temporal distance function that estimates goal progress from image and language inputs, trained on $\sim 3,000$ hours of synthetic and real-world trajectories and improving

alignment accuracy by over 20% over prior distance models.

- Designed a decoupled navigation framework that separates perception from control, letting RL policies trained in simulation use learned distance signals at deployment without retraining.
- Demonstrated strong sim-to-real transfer, retaining ~82% of success rate after replacing privileged simulator distances while outperforming state-of-the-art Habitat navigation baselines.
- Submitted the research paper to ECCV 2026 (under review); master's thesis graded 6/6.

Oracle Labs

Student Researcher

Zurich, Switzerland

Aug 2023 – Feb 2024, Oct 2024 – Feb 2025

- Integrated a GNN-based profile inference model into the Graal compiler, achieving a 4% runtime improvement over the previously productionized XGBoost-based model.
- Developed GraalNN, a two-phase GNN-based branch probability prediction framework, achieving a 10.13% speedup on the Renaissance, DaCapo, and DaCapo con Scala benchmarks.
- Automated performance monitoring and retraining pipelines, keeping the model aligned with the evolving Graal compiler in production environments.
- Published a research paper at CGO 2025 and registered a patent for the static profiler.

Palantir

Machine Learning Researcher and Software Engineer

London, United Kingdom

Jul 2024 – Sep 2024

- Extended the SAMv2 vision foundation model for Palantir's visual search system, reaching 74.7% accuracy in template object search on Objects365.
- Implemented aggregation pushdown in an internal data source so Spark could execute aggregations at the source, reducing query response times by up to 41%.

EPFL

Teaching Assistant

Lausanne, Switzerland

Feb 2024 – Jun 2024

- Assisted in a master's-level course on Artificial Neural Networks and Reinforcement Learning, covering mathematical and coding exercises on MDPs, Bellman equations, SARSA, policy gradients, and deep RL.

Microsoft

Software Engineer

Belgrade, Serbia

Jul 2022 – Oct 2022

- Developed backend systems for Azure Service Fabric in C#, including an emergency HostOS update mechanism that improved response time in critical situations by over 45%.

Inria Center at École Polytechnique

Student Researcher

Palaiseau, France

Jan 2021 – Apr 2022

- Reconstructed the TubeR model for spatiotemporal action detection, replicating reported results on JHMDB and UCF101.
- Enhanced the architecture with TimeSformer attention and TokenLearner-style components while reducing inference time by 28%.

Microsoft

Research Software Engineer

Belgrade, Serbia

Jun 2021 – Sep 2021

- Developed the first static analysis algorithm for data science notebooks, detecting critical bugs such as data leakage in 24% of tested cells while keeping analysis times under one second for 98.7% of notebooks.
- Automated static analysis of over 2,200 data science notebooks in Python, surfacing prevalent issues and demonstrating applicability on more than 85% of notebooks.
- Published a research paper at ICSE 2022 and registered a patent for the notebook static analyzer.

SKILLS & INTERESTS

Programming: Python, C++, Java, C, C#, JavaScript, React, React Native, R

ML & Systems: PyTorch, Hugging Face, deep learning, NLP, computer vision, reinforcement learning, graph neural networks, compiler optimization, static analysis

Languages: English (C2), French (B2), Serbian (C2)