Marc Fischer

I am currently a PhD student in Computer Science at ETH Zurich in Switzerland. Academically I am interested in Machine Learning/AI, Programming Languages, Systems, Mathematics and especially their interaction. My main area of interest are Machine Learning methods that are to some extent reliable, interpretable, explainable or secure.

Born: February 20, 1993
Graz, Austria
Nationality: Austrian

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Education

2019-   PhD in Computer Science, ETH Zurich

2017-2019   MSc in Computer Science, ETH Zurich
My thesis project studied the intersection of Deep Learning and Logic.

2013-2017   BSc in Computer Science, ETH Zurich

2007-2012   Secondary College of Electronic Data Processing and Organization ("Matura"), Kaindorf a.d. Sulm

Honors & awards

2019   Silver Medal of ETH Zurich for an outstanding Master's thesis

Teaching

2018-   Teaching Assistant for "Reliable and Trustworthy Artificial Intelligence" (previously "Reliable and Interpretable Artificial Intelligence"), helped in designing and building up a new research level course from scratch
ETH Zurich, by Prof. Martin Vechev; Course

2018-   Teaching Assistant for "Rigorous Software Engineering",
ETH Zurich, by Prof. Martin Vechev

2019-   Student Supervision in Seminar "Deep Learning for Big Code"
ETH Zurich, by Dr. Veselin Raychev

2016,2019, 2020   Teaching Assistant for "Paralleles Programmieren"
(Parallel programming for Computer Science Undergraduates),
ETH Zurich, by Prof. Torsten Hoefler, Dr. Hermann Lehner, Dr. Malte Schwerhoff, Dr. Felix Friedrich

2015   Teaching Assistant for "Informatik I"
(Introduction to Programming/Computer Science for Electrical Engineers),
ETH Zurich, by Dr. Felix Friedrich

Invited Speaker and Participant

2022   Dagstuhl workshop on Machine Learning and Logical Reasoning: The New Frontier

2022   Dagstuhl workshop on Security of Machine Learning

2021   Lorentz Center workshop on Robust Artificial Intelligence

2020   Guest Lecture in Reliable and Interpretable Artificial Intelligence at ETH Zurich

Service to the profession

2022   Outstanding Reviewer at ICML'22 (top 10%)

2022   Highlighted Reviewer at ICLR'22 (top 8%)

2020-   Reviewer for ICML, NeurIPS, ICLR

Work Experience

2017-2018   Student Research Assistant at SRILab (www.sri.inf.ethz.ch) with Prof. Martin Vechev, ETH Zurich
Research related to querying constraints on neural neural networks, adversarial examples/robustness, deep reinforcement learning, program synthesis and interpretability of deep learning.

2012-2013   Civil Service as Software Developer at the Styrian fire brigade Administration (www.lfv.steiermark.at), Focus: general software development, internal tools

2012   Internship as Software Developer at SLR Engineering (www.slr-engineering.at), Focus: Computer Vision, Optimization

2011   Internship as Software Developer at Atronic/Spielo GmbH (www.spielo.com), Focus: general software development, internal tools

2010   Internship as Software Developer at Infonova/BearingPoint (www.infonova.com), Focus: general software development, fulfillment software

Languages

- German, mother tongue
- English, fluent, C2
- Spanish, beginner, A1-A2

Hobbies

- Cooking
- Yoga
- Reading
- History
- Computer Gaming
- Photography
- Cycling

Publications

2022   Miklós Z. Horváth, Mark Niklas Müller, Marc Fischer, and Martin Vechev. (de-)randomized smoothing for decision stump ensembles. In *arXiv preprint arXiv:2205.13909*, 2022

2022   Miklós Z. Horváth, Mark Niklas Müller, Marc Fischer, and Martin Vechev. Robust and accurate - compositional architectures for randomized smoothing. In *ICLR 2022 Workshop on Socially Responsible Machine Learning*, 2022

2022   Miklós Z. Horváth, Mark Niklas Müller, Marc Fischer, and Martin Vechev. Boosting randomized smoothing with variance reduced classifiers. In *International Conference on Learning Representations*, 2022

2021   Mark Niklas Müller, Robin Staab, Marc Fischer, and Martin Vechev. Effective certification of monotone deep equilibrium models. In *arXiv preprint arXiv:2110.08260*, 2021

2021   Marc Fischer, Maximilian Baader, and Martin Vechev. Scalable certified segmentation via randomized smoothing. In *International Conference on Machine Learning (ICML)*. 2021

2020   Anian Ruoss, Mislav Balunović, Marc Fischer, and Martin Vechev. Learning certified individually fair representations. In *Advances in Neural Information Processing Systems 33*. 2020

2020   Marc Fischer, Maximilian Baader, and Martin Vechev. Certified defense to image transformations via randomized smoothing. In *Advances in Neural Information Processing Systems 33*. 2020

2019   Marc Fischer, Matthew Mirman, Steven Stalder, and Martin Vechev. Online robustness training for deep reinforcement learning. In *arXiv preprint arXiv:1911.00887*, 2019

2019   Marc Fischer, Mislav Balunovic, Dana Drachsler-Cohen, Timon Gehr, Ce Zhang, and Martin Vechev. Dl2: Training and querying neural networks with logic. In *International Conference on Machine Learning*, 2019

2018   Pavol Bielik, Marc Fischer, and Martin Vechev. Robust relational layouts synthesis from examples for android. In *ACM SIGPLAN Notices*. ACM, 2018