

Mohammad Hossein Amani

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[mh-amani.github.io](https://github.com/mh-amani)

INTERESTS

- Symbolic representation learning
 - Science of deep learning
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EDUCATION

Ph.D. Computer Science Sep 2022 – Present
École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland

B.Sc. Electrical Engineering and Physics (double major) Sep 2017 – Jun 2022
Sharif University of Technology, Tehran, Iran

PUBLICATIONS

- [Symbolic Autoencoding for Self-Supervised Sequence Learning](#)
MHA, Nicolas Mario Baldwin, Amin Mansouri, Martin Josifoski, Maxime Peyrard, and Robert West
Preprint Arxiv'24
 - [Sharp Asymptotics on the Compression of Two-layer Neural Networks](#)
MHA, Simone Bombari, Marco Mondelli, Rattana Pukdee, and Stefano Rini
Proc. IEEE Information Theory Workshop (ITW'22)
 - [Memorization and Optimization in Deep Neural Networks with Minimum Over-parameterization](#)
Simone Bombari, **MHA**, Marco Mondelli
Proc. of the Conference on Neural Information Processing Systems (NeurIPS'22)
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AWARDS & SCHOLARSHIPS

- **EPFL doctoral school Ph.D. fellowship** 2022
 - **Ranked 7th among 176 Electrical Engineering students** 2021
 - **Silver medal in national Physics Olympiad** 2016
Exams included classical mechanics, electrodynamics, statistical physics, and basic solid state physics.
 - **Ranked 370 in national university entrance exam** 2017
Ranked 370 out of 140000 students in national university entrance exam, Physics and Mathematics Discipline.
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RESEARCH EXPERIENCES

- **Self-supervised symbolic representation learning with discrete autoencoders** Sep 2022 – Present
Supervisor: **Professor Robert West**
Ecole polytechnique fédérale de Lausanne (EPFL)
- **Maximum distance-two independent-set on random graphs** Feb 2022 – Jun 2022
Supervisor: **Professor Lenka Zdeborova**
Ecole polytechnique fédérale de Lausanne (EPFL)
- **Minimal overparameterization guarantees in the neural tangent kernel** Apr 2021 – Feb 2022
Supervisor: **Professor Marco Mondelli**
Institute of science and technology, IST Austria
- **Foundational limits of neural network compression** Feb 2021 – Feb 2022
Supervisor: **Professor Marco Mondelli**
Institute of science and technology, IST Austria
- **Representation limits of classical and quantum graphical models** Jul 2019 – Sep 2019
Supervisor: **Professor Pascal Olivier Vontobel**
The Chinese university of Hong Kong (CUHK)

TEACHING

Teaching assistant at EPFL for the following courses:

- Probability and Statistics Spring 2023
- Applied Data Analysis Fall 2023

Teaching assistant at Sharif University of Technology for the following courses:

- High-dimensional probabilistic analysis Spring 2021
- Signals and systems Spring 2020
- Probability and statistics Fall 2019
- Introduction to programming (C and C++) Spring 2018

Teacher at Allame Helli High School

Jun 2017 – Jun 2020

- I taught electromagnetism, statistical mechanics, calculus, and thermodynamics to students preparing for Physics Olympiad.
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SKILLS

- TensorFlow, Pytorch
 - Python, Scikit-learn
 - MATLAB
 - C++
 - \LaTeX
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