

ERFAN MIRZAEI

ELLIS Ph.D. Student in Machine Learning

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EDUCATION

Ph.D. in Applied Mathematics

Istituto Italiano di Tecnologia & École Polytechnique & Università di Genova Nov 2023 – Present

Genoa, Italy / Paris, France

- The overarching goal is to explain why and how modern machine learning algorithms generalize by leveraging concentration inequalities, PAC-Bayes framework, and information theory.
- Advisors: [Massimiliano Pontil](#), [Karim Lounici](#).

M.Sc. in Artificial Intelligence and Robotics

University of Tehran Nov 2020 – June 2023

Tehran, Iran

- GPA: 19.49/20 (4.0/4.0). Ranked 2nd in cohort. Courses: ML, RL, DL, Information Theory, Neuroscience Fundamentals, Distributed Optimization, Game Theory.

B.Sc. in Mechanical Engineering

University of Tehran Sep 2016 – Sep 2020

Tehran, Iran

- GPA: 17.34/20 (3.66/4.0). Top 15% of undergraduate students.
- Thesis: Controlling Temperature Using RL in Smart Environments.

PUBLICATIONS & PRE-PRINTS

Symbols: † denotes equal contribution.

1. A. Maurer, **E. Mirzaei**, M. Pontil. *Generalization of Gibbs and Langevin Monte Carlo Algorithms in the Interpolation Regime*. Under Review, 2025. [[arXiv](#)]
2. G. Turri, G. Pacreau, G. Meanti, T. Devergne, D. Ordonez, **E. Mirzaei**, et al. *kooplearn: A Scikit-Learn Compatible Library of Algorithms for Evolution Operator Learning*. Under Review, 2025. [[arXiv](#)] [[Code](#)]
3. **E. Mirzaei**, A. Maurer, V. Kostic, M. Pontil. *An Empirical Bernstein Inequality for Dependent Data in Hilbert Spaces and Applications*. AISTATS, 2025. [[arXiv](#)] [[Code](#)]
4. **E. Mirzaei**, A. Tavakoli, S.P. Shariatpanahi, R. Hosseini, M.N. Ahmadabadi. *Exploiting Expertise of Non-Expert and Diverse Agents in Social Bandit Learning: A Free Energy Approach*. IEEE Transactions on Cognitive and Developmental Systems (TCDS), 2025. [[PDF](#)]
5. H. Ghaemi†, **E. Mirzaei**†, M. Nouri†, S.R. Kheradpisheh. *BioLCNet: Reward-modulated Locally Connected Spiking Neural Networks*. ACAIN, 2022. [[arXiv](#)] [[Code](#)]

AWARDS & RECOGNITIONS

INdAM Membership (Real Analysis, Measure Theory & Probability)

Istituto Nazionale di Alta Matematica (INdAM) Jan 2026

Italy

- National network of mathematical excellence supporting research projects and scientific mobility.

3rd Place, National Brain-Computer Interface Competition

National Brain Mapping Laboratory (NBML) June 2022

Tehran, Iran

- Ranked 3rd out of 20 teams in the 5th national competition focusing on auditory attention.

Winner of Supporter Foundation of the University of Tehran Scholarship (2×)

University of Tehran Oct 2016/17

Tehran, Iran

- Recognized for outstanding academic performance
- National Graduate Entrance Exam Top Rank** Aug 2020
National Organization of Educational Testing Iran
- Ranked 27th (Top 0.1%) nationwide in Computer Science.

EXPERIENCE

Teaching Assistant (Comp. Neuroscience & NeuroAI) <i>Neuromatch Academy</i>	Part-time contract - Jul 2022 & 2025 Remote
· Instructed and mentored students through course material and final projects.	
Teaching Assistant <i>University of Tehran</i>	2021 – 2022 Tehran, Iran
· Courses: Information Theory, Reinforcement Learning, Distributed Optimization.	
Python Instructor (Volunteer) <i>KaarYar</i>	Oct 2022-2025 Remote
· A social start-up providing education to underprivileged communities.	
Undergraduate Research Assistant <i>School of Mechanical Engineering, University of Tehran</i>	Jul 2020 - Sep 2020 Tehran, Iran

EVENTS

Mathematical Aspects of Data Science Summer School, EPFL <i>Presented [3]</i>	Sep 2025 Lausanne, Switzerland
Learning and Optimization in High Dimensions Workshop, Bocconi University <i>Presented [3]</i>	Jul 2025 Milan, Italy
Theoretical Foundations of Machine Learning <i>MaLGa Lab, University of Genoa</i>	Jun 2025 Genoa, Italy
New Trends in Statistical Learning <i>Edition V</i>	Jun 2025 Porquerolles, France
Artificial Intelligence and Statistics (AISTATS) Conference <i>Presented [3]</i>	May 2025 Phuket, Thailand
ELLIS Doctoral Symposium (EDS2024) <i>ELLIS Society</i>	Aug 2024 Paris, France
Data-driven Dynamical Systems Summer School <i>University of Bremen</i>	Jul 2024 Bremen, Germany
International Conference on Statistics and Related Fields <i>in honor of Vladimir Koltchinskii</i>	Jun 2024 Bertinoro, Italy

SKILLS

Languages	English (C1), Italian (A2), Farsi/Persian (Native)
Programming	Python (PyTorch, Tensorflow, Scikit-Learn), MATLAB, R
Miscellaneous	LaTeX, Git, Slurm (HPC)