

# ARASH JAMSHIDI

ELLIS Ph.D. Student at University of Helsinki and KTH Royal Institute of Technology

[Google Scholar](#) ◇ [Email](#) ◇ [Telephone](#) ◇ [LinkedIn](#)

## RESEARCH INTERESTS

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◇ Machine Learning Theory

◇ Applied Probability

## EDUCATION

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### ELLIS Ph.D. Program

September 2024 - 2028

Ph.D. in Computer Science,

Primary Host: University of Helsinki, Exchange Host: KTH Royal Institute of Technology

Thesis: “Theoretical Properties of Gradients in Machine Learning and High-Dimensional Statistics”

Supervisors: [Prof. Kai Puolamäki](#) and [Prof. Aristides Gionis](#)

### Sharif University of Technology

2021 - 2024

Master of Artificial Intelligence and Robotics,

CGPA Theoretical Courses: **19.62/20 (98.1%)**

Thesis: “Submodularity, Differential Privacy, and Auctions”

Supervisor: [Prof. Mahdi Jafari Siavoshani](#)

### Azad University

2017 - 2021

Bachelor of Computer Engineering,

CGPA: 16.53/20 (82.65%)

Thesis: “A Music Identification System Based on Audio Fingerprinting”

## HONORS AND AWARDS

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◇ Received Ph.D. offers from several ELLIS PIs for the **ELLIS Ph.D. Program** (acceptance rate < 3%). 2024

◇ **Ranked 10th** in the Nationwide M.Sc Entrance Exam in Computer Engineering in Iran among more than **16000** participants (**99.93 percentile**)

2021

## PUBLICATIONS

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- [1] **Arash Jamshidi**, Katsiaryna Haitsiukevich, Aristides Gionis, and Kai Puolamäki, “Calibrated target noise recovers curvature from the gradients,” *Under review at NeurIPS 2026*,
- [2] **Arash Jamshidi**, Katsiaryna Haitsiukevich, and Kai Puolamäki, “Information hidden in gradients of regression with target noise,” *29th International Conference on Artificial Intelligence and Statistics (AISTATS 2026)*,
- [3] **Arash Jamshidi**, Lauri Seppäläinen, Katsiaryna Haitsiukevich, Hoang Phuc Hau Luu, Anton Björklund, and Kai Puolamäki, “Gradstop: Early stopping of gradient descent via posterior sampling,” *28th European Conference on Artificial Intelligence (ECAI 2025)*,
- [4] Seyed Mohammad Hosseini\*, **Arash Jamshidi\***, Seyed Mahdi Nourmousavi, Mahdi Jafari Siavoshani, and Naeimeh Omidvar, “Extended deep submodular functions,” *Transactions on Machine Learning Research (TMLR)*, 2024.
- [5] **Arash Jamshidi\***, Seyed Mohammad Hosseini\*, Seyed Mahdi Nourmousavi, and Mahdi Jafari Siavoshani, “Differentially private machine learning-powered combinatorial auction design,” *arXiv preprint*, 2024.

\*Equal contribution

## GRADUATE COURSEWORK

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### University of Helsinki

Measure Theory

5/5 Convex Analysis II

5/5

### Sharif University of Technology

Machine Learning

20.0/20 Real Analysis

Audit

Stochastic Processes

19.6/20 Advanced Linear Algebra

Audit

Convex Optimization

20.0/20 Online Learning and Bandit

Audit

Machine Learning Theory

19.6/20 Algorithmic Game Theory

Audit

Information Theory and Coding

20.0/20 Submodular Funcs. and Opt.

Audit

Info. Theoretic Methods in High-Dim. Statistics

18.5/20 Algorithms for Big Data

Audit

High-Dimensional Probability

19.7/20

## RESEARCH EXPERIENCE

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### Doctoral Researcher

2024 - Present

University of Helsinki

I am a second-year Ph.D. student working on topics related to machine learning theory and algorithms. I mainly work on the statistical properties of gradients in machine learning. The first paper of my Ph.D. was accepted to ECAI 2025, the second paper was accepted at AISTATS 2026, and my third paper is under review at NeurIPS 2026.

Supervisors: [Prof. Kai Puolamäki](#) and [Prof. Aristides Gionis](#)

### Research Assistant

2021 - 2024

Sharif University of Technology

I have worked on submodularity in my Master's thesis. We have proven new results on Deep Submodular Functions and extended this subclass of submodular functions to all monotone set functions while preserving their important properties, such as concavity, with applications in learning submodular functions and designing auctions. This research led to an accepted [paper](#) in Transactions on Machine Learning Research (TMLR). I also have [worked](#) on the usage of Differential Privacy to enforce truthfulness in auctions.

Supervisor: [Prof. Mahdi Jafari Siavoshani](#)

## SUMMER SCHOOLS

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◇ Attended the **PhD Summer School on Intersections of Algorithms and Machine Learning Theory** (Odense, Denmark), with full travel support from [FCAI \(Finnish Center for Artificial Intelligence\)](#). 2025

## TEACHING EXPERIENCE

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### Teacher Assistant

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|------------------------------------------|-------------|------------------------------------------------|
| ◇ Stochastic Processes in Bioinformatics | Spring 2022 | Instructor: <a href="#">Prof. M.H. Rohban</a>  |
| ◇ Artificial Intelligence                | Fall 2022   | Instructor: <a href="#">Prof. M. Soleymani</a> |
| ◇ Machine Learning                       | Fall 2022   | Instructor: <a href="#">Prof. M. Soleymani</a> |
| ◇ Convex Optimization                    | Spring 2023 | Instructor: <a href="#">Prof. M. Jafari S.</a> |
| ◇ Machine Learning Theory                | Spring 2023 | Instructor: <a href="#">Prof. H. Beigy</a>     |
| ◇ Machine Learning                       | Fall 2023   | Instructor: <a href="#">Prof. M. Jafari S.</a> |
| ◇ Introduction to Machine Learning       | Fall 2024   | Instructor: <a href="#">Prof. K. Puolamäki</a> |
| ◇ Introduction to Machine Learning       | Fall 2025   | Instructor: <a href="#">Prof. K. Puolamäki</a> |

## SKILLS

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**Programming** Python, C, C++, Java, Swift      **Tools** PyTorch, scikit-learn, Pandas, Numpy

## LANGUAGES

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**English** TOEFL iBT: 106/120 (R:29/30, L:30/30, S:22/30, W:25/30)      **Persian** Native