

Mohammad Jalali

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📧 live:.cid.88a738db14fc8714 📄 Google Scholar

Research Interests

- **Machine Learning:** Deep Learning, Generative Models, Graph Neural Network, Machine Learning Theory
- **Applied Mathematics:** Algorithmic Graph Theory, Game Theory, Information theory, Approx. algorithms

Education

- B.Sc. in Computer Engineering** 2018 - Present
Isfahan University of Technology, Isfahan, Iran.
GPA: 17.67/20
Thesis: On Learning in GANs by using Learning Algorithms in Multi-agent Systems. Grade: 20/20
- B.Sc in Mathematics (Dual degree)** 2019 - Present
Isfahan University of Technology, Isfahan, Iran.
Thesis: Improving Clustering Algorithms using Algorithmic Graph Theory
- Diploma in Mathematics and Physics Discipline** 2014 - 2018
Harati high school, Isfahan, Iran.

Publications

- On Evaluation of Generative Models in Learning Multi-modal distributions** Jan 2023
M Jalali, CT Li, F Farnia
Under Review
- Games of GANs: Game Theoretical Models for Generative Adversarial Network** Jun 2021
M Mohebbi Moghadam, B Boroomand, M Jalali*, A Zareian*, A DaeiJavad, MH Manshaei, M Krunz*
Accepted in the [Artificial Intelligence Review journal](#).
- * Equal Contribution

Research Experience

- Research Intern** Jun 2022 - Present
Department of Computer Science and Engineering (CSE), Chinese University of Hong Kong
 - Supervisor: [Prof. Farzan Farnia](#)
 - Developed a novel metric inspired by Graph-based clustering algorithms and quantum information theory to evaluate the diversity of GANs.
 - Implemented popular GANs from DCGAN to SAGAN and compared our metric with others.
- Undergraduate Research Assistant** Aug 2020 - Dec 2021
Game Theory and Mechanism Design (GTMD) Research Lab., Isfahan University of Technology
 - Supervisor: [Prof. Mohammad Hossein Manshaei](#)
 - Reviewed the literature on the game theoretic aspects of GANs and addresses how game theory models can address specific challenges of generative models and improve the GAN's performance.
 - Working on a Generative Adversarial Network framework and designing a novel GAN using multi-agent algorithms to improve the stability and diversity of GANs.
- Undergraduate Research Assistant** Jan 2022 - Feb 2023
Department of Mathematical Sciences, Isfahan University of Technology, Iran
 - Supervisor: [Prof. Ramin Javadi](#)
 - Working on designing an approx. algorithm for maximizing the rank and clustering problem using Spectral Graph Theory.
- Undergraduate Research Assistant** Mar 2022 - Aug 2022
Edge Networks Group, IMDEA Networks Institute, Madrid, Spain
 - Supervisor: [Prof. Jaya Prakash Champati](#)
 - We worked on Computation Offloading for ML Inferences using classical Reinforcement Learning algorithms like DQN.

Honors and Awards

- **Ranked 2nd** in cumulative GPA among **+50 B.Sc. Mathematics students** in class, 2018 beginners, Isfahan University of Technology. (2/50)
- **Top 2 percent** of **Iranian nationwide university entrance exam** for undergraduate studies, the field of Mathematics-Physics, among more than **150,000** students.
- Among the top Isfahan University of Technology students that could apply for a dual major.

Teaching Experience

Teaching Assistant

2018 - Present

Isfahan University of Technology, Isfahan, Iran.

- **Algorithms of Data Science** (Grad. Course), Fall 2023
- **Applied Linear Algebra**, Fall 2022, Spring 2021
- **Graph Mining** (Graduate Course), Spring 2022
- **Game Theory**, Fall 2021
- **Formal languages and Automata**, Spring 2021
- **Computer Network**, Spring 2022
- **Advanced Programming**, Spring 2021, Spring 2020
- **Digital Design**, Spring 2020
- **Basic Programming**, Fall 2019

Co-head of Game theory and Mechanism Design Workshop

Aug 2020 – Sep 2020

Isfahan Math House, Isfahan, Iran

One-week workshops for high school students.

Selected Courses

- **Information Theory** (Grad. Course), Ongoing
- **Deep Learning** (Grad. Course), 17/20
- **Machine Learning** (Grad. Course), 18.1/20
- **Fund. of Data Science** (Grad. Course), 18.2/20
- **Machine Learning on Graphs**, 19.9/20
- **Artificial Intelligence**, 19.25/20
- **Stochastic Processes**, 16/20
- **Algorithm Design**, 20/20
- **Game Theory**, 20/20
- **Cryptography**, 19.5/20
- **Advanced Computer Network**, 18/20
- **Data Structure**, 19.5/20
- **Discrete Mathematical Structures**, 18.9/20
- **Advanced Programming**, 19.34/20

Work Experience

Software Engineer

Dec 2020 - Feb 2023

PayamPardaz, Shahidan Sharghi, Isfahan, Iran

- Working on multi-factor authentication (MFA) product under the supervision of Mr. Fooladgar
- Programming using Python and Django framework
- Built fully automated CI pipelines on GitLab CI for containerized applications using Docker

Skills

- **Languages:** Python, C++, JavaScript, C, SQL
- **Personal Skills:** Teamwork, Eager to learn new things, Flexibility, Teaching
- **Frameworks:** PyTorch, TensorFlow, Django, Docker, Kubernetes
- **OS:** Linux, Microsoft Windows
- **Other:** Git, OOP, SOLID principles, Design patterns

Languages

- Persian: Native
- English: Upper-Intermediate