Sina Sajadmanesh Last update: 01 Feb, 2023

Contact Information

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Research Interests

Differential Privacy, Trustworthy Machine Learning, Federated Learning, Graph Representation Learning

Education

École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland, May 2019 – August 2023
Ph.D. in Electrical Engineering GPA: 5.7 / 6
Thesis: *Trustworthy Machine Learning on Graphs*
Adviser: Prof. Daniel Gatica-Perez
Relevant Courses: Artificial Neural Networks (Deep Reinforcement Learning), Deep Learning for Natural Language Processing, Advanced Topics in Machine Learning

Sharif University of Technology, Tehran, Iran, Sep 2014 – Sep 2016
M.Sc. in Information Technology Engineering GPA: 18.1 / 20
Thesis: *Link Prediction in Heterogeneous Multi-Layer Social Networks*
Adviser: Prof. Hamid R. Rabiee
Relevant Courses: Machine Learning, Complex Dynamical Networks, Performance Modeling of Computer Systems, Advanced Network Security, Database Security and Privacy

University of Isfahan, Esfahan, Iran, Sep 2009 – Feb 2014
B.Sc. in Computer Software Engineering GPA: 16.19 / 20 (Last four semesters: 17.4 / 20)
Project: *Design and Implementation of an Android App for Voice Control of Household Devices*
Adviser: Prof. Ahamd R. Naghsh-Nilchi
Relevant Courses: Data Structures, Algorithms, Probability and Statistics, Artificial Intelligence, Information Retrieval, Software Engineering, Databases, Operating Systems, Computer Networks

Research Experience

Visiting PhD Student, Feb 2023 – April 2023
Safe and Ethical AI Programme, **The Alan Turing Institute**, London, UK
- Working on trustworthy machine learning on graphs, aiming to address both privacy concerns and robustness issues of graph representation learning algorithms.

Research Assistant, May 2019 – present
Social Computing Group, **Idiap Research Institute**, Martigny, Switzerland
- Developing privacy-preserving graph neural network models using differential privacy to reduce the privacy risks of using graph representation learning algorithms in real applications.

Research Intern, March 2022 – May 2022
Brave Software, San Francisco, CA, USA (Remote)
- Worked on federated reinforcement learning algorithms to build privacy-preserving recommendation systems for Brave's ads and news recommendation.

Research Assistant, Nov 2014 – May 2019
Data Science and Machine Learning Lab, **Sharif University of Technology**, Tehran, Iran
- Privacy-Preserving Deep Learning: Worked on a hybrid mobile-server learning architecture based on Siamese fine-tuning and split learning to make non-private pre-trained deep learning models privacy-preserving at the inference stage.
- Web Data Science: Analyzed a large-scale collection of recipes published on the web and their content, aiming to understand cuisines and culinary habits around the world.
- Social and Information Networks: Developed time-aware link prediction algorithms over heterogeneous social networks using recurrent neural networks and non-parametric machine learning.

Teaching Experience

Lecturer, November 2022
International AI Doctoral Academy (AIDA), Online
Course: An Introduction to Trustworthy Machine Learning
Website: https://www.i-aida.org/course/an-introduction-to-trustworthy-machine-learning/

Lecturer, Fall 2017
Department of Computer Engineering, **Sharif University of Technology**, Tehran, Iran
Course: Fundamentals of Programming (Python)
Website: http://ce.sharif.edu/courses/96-97/1/ce153-12/

Teaching Assistant

EPFL
- Computational Social Media (Head TA), Spring 2021, Spring 2022

Sharif University of Technology
- Artificial Intelligence (Head TA), Spring 2017
- Advanced Topics in Artificial Intelligence - Statistical Learning Theory, Spring 2016
- Engineering Probability and Statistics, Spring 2016

University of Isfahan
- Artificial Intelligence, Fall 2013
- Advanced Computer Programming 2 - JavaFx and Android, Fall 2012
- Computer Programming - Java, Fall 2011
- Computer Programming - C++, Fall 2010

Industrial Experience

Big-Data Engineer, Sep 2018 – May 2019
Sharif ICT Innovation Center, Tehran, Iran
- Responsible for building a native big-data processing platform using state-of-the-art technologies, such as Spark, Cassandra, JanusGraph, Elasticsearch, etc.

Publications

[1] **Sina Sajadmanesh**, Ali Shahin Shamsabadi, Aurélien Bellet, and Daniel Gatica-Perez
GAP: Differentially Private Graph Neural Networks with Aggregation Perturbation
USENIX Security Symposium (USENIX Security 23), Aug 2023

[2] **Sina Sajadmanesh** and Daniel Gatica-Perez
Locally Private Graph Neural Networks
ACM Conference on Computer and Communications Security (CCS 2021), Nov 2021

[3] Seyed Ali Osia, Ali Shahin Shamsabadi, **Sina Sajadmanesh**, *et al.*
A Hybrid Deep Learning Architecture for Privacy-Preserving Mobile Analytics
IEEE Internet of Things Journal, May 2020

[4] **Sina Sajadmanesh**, Sogol Bazargani, Jiawei Zhang, and Hamid R. Rabiee
Continuous-Time Relationship Prediction in Dynamic Heterogeneous Information Networks
ACM Transactions on Knowledge Discovery from Data, Aug 2019

[5] **Sina Sajadmanesh**, Jiawei Zhang, and Hamid R. Rabiee
NPGLM: A Non-Parametric Method for Temporal Link Prediction
Technical Report, ArXiv e-prints, Jun 2017

[6] **Sina Sajadmanesh**, Sina Jafarzadeh, Seyed Ali Ossia, *et al.*
Kissing Cuisines: Exploring Worldwide Culinary Habits on the Web
International World Wide Web Conference (WWW 2017) Companion, Apr 2017

[7] **Sina Sajadmanesh**, Hamid R. Rabiee and Ali Khodadadi
Predicting Anchor Links between Heterogeneous Social Networks
IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining, Aug 2016

Media Coverage

- **MIT Technology Review**, How Data Mining Reveals the World's Healthiest Cuisines, 3 Nov 2016
- **The Independent**, These are the world's most diverse cuisines, 11 Nov 2016
- **France 24**, Un algorithme compare les cuisines du monde en matière d'ingrédients et d'apports nutritionnels, 15 Nov 2016
- **Sciences et Avenir**, Les cuisines du monde passées au crible des big data, 14 Nov 2016

Talks and Presentations

Privacy-Preserving Machine Learning on Graphs
Socially Responsible AI Course, University of Illinois at Chicago (Remote), October 2022

GAP: Differentially Private Graph Neural Networks with Aggregation Perturbation
L3S Research Center (Remote), Aug 2022

Locally Private Graph Neural Networks
Graph Neural Networks User Group Meetup (Remote), Jul 2021
AI4Media Workshop on Explainability, Robustness and Privacy in AI (Remote), Jun 2021
Twitter Machine Learning Seminar (Remote), Jan 2021

Privacy-Preserving Deep Learning Over Graphs
Information Processing and Communications Lab, **Imperial College London** (Remote), Dec 2020

Professional Services

- Reviewer: International Conference on Artificial Intelligence and Statistics (AISTATS) (2023)
- Reviewer: Learning on Graphs Conference (2022)
- PC Member: ICLR Workshop on Privacy, Accountability, Interpretability, Robustness, Reasoning on Structured Data (2022)
- Reviewer: Artificial Intelligence Journal (2022)
- Reviewer: IEEE Transactions on Big Data (2021)
- Reviewer: ICLR Workshop on Distributed and Private Machine Learning (2021)
- Reviewer: ACM Transactions on Intelligent Systems and Technology (2020)
- Reviewer: Social Network Analysis and Mining Journal (2020)
- Reviewer: World Wide Web Journal (2018)

Honors and Awards

- **Travel Grant**, for attending CISPA Summer School on Trustworthy AI, Saarbrücken, Germany, 2022
- **Finalist**, in CSAW Applied Research Competition for the best paper award in computer security, 2021
- **PhD research assistantship**, Computer Science, University of Illinois at Urbana-Champaign, 2018 (declined)
- **PhD studentship** Computer Science, Hong-Kong University of Science and Technology, 2017 (declined)
- **Ranked 6th** in nationwide university entrance exam for graduate studies in Artificial Intelligence, Iran, 2014
- **Ranked 16th** in ACM-ICPC regional programming contest, Asia region, University of Tehran, Iran, 2011
- **Ranked 2nd** in nationwide collegiate programming contest, University of Kashan, Iran, 2010
- **Ranked among top 0.02%** in Iran's nationwide university entrance exam for undergraduate studies, 2009

Technical Skills

Programming Languages:
Python, Java, C++

Machine Learning & Data Science:
PyTorch, PyTorch-Geometric, PyTorch-Lightning, Tensorflow, Scikit-Learn, Pandas

Privacy-Enhancing Technologies:
Flower, Opacus, Auto-DP

References

Prof. Daniel Gatica-Perez, Idiap Research Institute, EPFL
Website: https://idiap.ch/~gatica Email: daniel.gatica-perez@epfl.ch

Prof. Hamid R. Rabiee, Sharif University of Technology
Website: http://sharif.ir/~rabiee Email: rabiee@sharif.edu

Prof. Hamed Haddadi, Imperial College London
Website: https://haddadi.github.io/ Email: h.haddadi@imperial.ac.uk

Prof. Emiliano De Cristofaro, University College London
Website: https://emilianodc.com/ Email: e.decristofaro@ucl.ac.uk