Sina Sajadmanesh

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SUMMARY

Machine Learning Researcher – Software Engineer – Data Scientist

- **A self-motivated and diversely skilled professional** with 8 years of experience in designing, developing, and implementing machine learning models, AI solutions, and data-driven insights.
- **Adept in various machine learning frameworks, programming languages, and data analysis tools.** Passionate about leveraging cutting-edge technology to solve complex real-world problems and drive business growth.
- **A proven track record of success in research and development**, with several publications in top-tier conferences and journals. Demonstrated team working and leading projects from concept to completion.
- **A continuous learner with a growth mindset**, eager to contribute to the development of next-generation AI solutions and software that align with the strategic objectives and vision of a leading technology organization.

SKILLS AND EXPERTISE

Programming and Scripting Languages:
Python (Expert), Java (Moderate), C++ (Moderate), Shell Scripting (Moderate), SQL (Moderate), LaTeX (Moderate)

Machine Learning & Data Analysis:
PyTorch, PyTorch-Geometric, Tensorflow, Tensorflow-Lite, Scikit-Learn, Pandas, Numpy, Jupyter, Matplotlib

MLOps & Related Technologies:
Weights & Biases, PyTorch-Lightning, Dask, Git, Linux, Docker

Privacy-Enhancing Technologies:
Flower (Federated Learning), Opacus (Differentially Private ML), Auto-DP (Privacy Accounting)

EDUCATION

Ph.D. in Electrical Engineering (GPA: 5.75 / 6)
Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland — May 2019 – Aug 2023

M.Sc. in Information Technology Engineering (GPA: 18.1 / 20)
Sharif University of Technology, Tehran, Iran — Sep 2014 – Sep 2016

B.Sc. in Computer Software Engineering (GPA: 16.19 / 20)
University of Isfahan, Esfahan, Iran — Sep 2009 – Feb 2014

PROFESSIONAL EXPERIENCE

Research Assistant
Idiap Research Institute, Martigny, Switzerland, — May 2019 – August 2023

Recruited as a doctoral researcher to contribute to AI4Media, a European research project focusing on ethical and trustworthy AI to serve media and society. Developed privacy-preserving graph neural network (GNN) models using differential privacy to reduce privacy risks in real applications, such as recommendation systems and knowledge graphs.

- Conducted high-quality and impactful research: **published two papers** in top conferences, namely, ACM CCS and USENIX Security, and one under review, **received over 60 citations** since 2021 and delivered **more than 6 invited talks** at top institutions and companies, such as Imperial College London, University of Illinois, and Twitter.
- **Implemented locally private GNN models** using PyTorch-Geometric that enables online social networks to learn from their users' data without compromising their privacy. **Received over 38 stars and 13 forks** on GitHub.

- **Developed a differentially private GNN model** using PyTorch-Geometric, Opacus, and Auto-DP that enables privacy-preserving training and inference of GNNs. **Received over 20 stars and 1 fork** on GitHub.
- **Finalist** in CSAW Applied Research Competition for the best paper award in computer security in Europe.
- **Offered a travel grant** to attend CISPA Summer School 2022 on Trustworthy Artificial Intelligence in Germany.

Visiting Collaborator
The Alan Turing Institute, London, UK,   March 2023

Joined the Safe and Ethical AI group as a visiting PhD student to contribute to their ongoing research on trustworthy AI.
- **Co-organized a workshop** on Privacy and Fairness in AI for Health with **11 invited speakers** from top research institutes and companies, such as Oxford, Microsoft, and DeepMind, and **over 60 attendees**.

Research Intern
Brave Software, San Francisco, CA, USA (Remote),   Mar 2022 – May 2022

Recruited as a member of the research team to contribute to privacy-preserving machine learning research, aiming to improve Brave Browser's ads and news recommendation systems.
- **Hand-picked to work on a project** about federated reinforcement learning for privacy-preserving recommendation.
- **Developed an experimental framework** to evaluate the performance of federated neural bandits under client heterogeneity using PyTorch and Flower for server-side simulation and Tensorflow-Lite for mobile clients.

Data Engineer
Sharif ICT Innovation Center, Tehran, Iran,   Sep 2018 – May 2019

Served in a part-time role as a member of an R&D team to develop a native big-data processing platform for the center.
- **Conducted a comprehensive study on massively scalable graph databases**, such as Neo4j, OrientDB, and JanusGraph, by setting up, configuring, and benchmarking them on a computing cluster.
- **Developed a dashboard** to discover key insights from customers' data using Kibana, Elasticsearch, and Cassandra.

Research Assistant
Sharif University of Technology, Tehran, Iran,   Nov 2014 – May 2019

Joined the Data Science and Machine Learning Lab as a master's student and continued as a research assistant after graduation. Worked on a range of research projects in the areas of privacy-preserving machine learning, web data science, and social and information network analysis.
- Conducted high-quality and impactful research: **published four papers** in top-tier venues, including IEEE IoTJ, ACM TKDD, and TheWebConf, **with over 350 citations** since 2016.
- 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.
- **Conducted large-scale data analysis** using a collection of recipes published on the web and their content, aiming to understand cuisines and culinary habits around the world. **Received media coverage** from prominent news outlets, such as MIT Technology Review, The Independent, and France 24.
- **Developed time-aware link prediction algorithms** over heterogeneous social networks using recurrent neural networks and non-parametric machine learning.
- Received **research assistantship** from IBM-ILLINOIS Center for Cognitive Computing Systems Research (declined due to visa issues).

TEACHING EXPERIENCE

Lecturer
International AI Doctoral Academy (AIDA), Online,   Nov 2022

    Course: An Introduction to Trustworthy Machine Learning, November 2022

    Website: https://www.i-aida.org/course/an-introduction-to-trustworthy-machine-learning/

Lecturer
Sharif University of Technology, Tehran, Iran,   Fall 2017

    Course: Fundamentals of Programming (Python), Fall 2017

    Website: http://ce.sharif.edu/courses/96-97/1/ce153-12/

Teaching Assistant
Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland,
> **Courses:** Computational Social Media (Spring 2021, 2022, and 2023)

Teaching Assistant
Sharif University of Technology, Tehran, Iran,
> **Courses:** Artificial Intelligence (Spring 2017), Advanced Topics in Artificial Intelligence - Statistical Learning Theory (Spring 2016), Engineering Probability and Statistics (Spring 2016)

Teaching Assistant
University of Isfahan, Esfahan, Iran,
> **Courses:** Artificial Intelligence (Fall 2013), Advanced Computer Programming 2 - JavaFx and Android (Fall 2012), Computer Programming - Java (Fall 2011), Computer Programming - C++ (Fall 2010)

COMMUNITY AND PROFESSIONAL SERVICES

Invited Speaker
Imperial College London (2023, 2020), University of Illinois at Chicago (2022), L3S Research Center (2022), Graph Neural Networks User Group Meetup (2021), Twitter Machine Learning Seminar (2021)

Organizing Committee Member
Privacy and Fairness in AI for Health Workshop (2023)

Program Committee Member
ACM Workshop on Wireless Security and Machine Learning (WiseML) (2023), ICLR PAIR2Struct Workshop (2022)

Scientific Peer Reviewer
Learning on Graphs Conference (2023, 2022), International Conference on Artificial Intelligence and Statistics (AIS-TATS) (2023), Artificial Intelligence Journal (2022), IEEE Transactions on Big Data (2021), ICLR Workshop on Distributed and Private Machine Learning (2021), ACM Transactions on Intelligent Systems and Technology (2020), Social Network Analysis and Mining Journal (2020), World Wide Web Journal (2018)

PUBLICATIONS

[1] Sina Sajadmanesh and Daniel Gatica-Perez
ProGAP: Progressive Graph Neural Networks with Differential Privacy Guarantees
Technical Report, ArXiv e-prints, Apr 2023

[2] 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

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

[4] Sina Sajadmanesh and Daniel Gatica-Perez
When Differential Privacy Meets Graph Neural Networks
Technical Report, ArXiv e-prints, Jun 2020

[5] 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

[6] 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

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

[8] 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

[9] 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