Sina Sajadmanesh

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Education

- Ph.D. in Electrical Engineering (GPA: 5.75 / 6) — May 2019 – Aug 2023
  Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland
- M.Sc. in Information Technology Engineering (GPA: 18.1 / 20) — Sep 2014 – Sep 2016
  Sharif University of Technology, Tehran, Iran
- B.Sc. in Computer Software Engineering (GPA: 16.19 / 20) — Sep 2009 – Feb 2014
  University of Isfahan, Esfahan, Iran

Professional Experience

- AI Engineer
  Sony AI, Zurich, Switzerland — October 2023 – Present

  Working as a member of the Privacy-Preserving Machine Learning team to contribute to the development of secure and trustworthy AI solutions.

  - **Developed an end-to-end open-world classification pipeline** using OpenMMLab frameworks and HuggingFace to train and test privacy-preserving **vision foundation models** for Sony's next-generation AI products.
  - **Improved the speed of training and inference** of models by optimizing the code and leveraging distributed computing.

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

  Worked as a doctoral researcher on privacy-preserving graph neural network (GNN) models using differential privacy to reduce privacy risks in real applications, such as recommendation systems and knowledge graphs.

  - **published three papers** in top conferences: CCS, USENIX, and WSDM, **received over 120 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 differentially private GNN solutions** using PyTorch-Geometric, Opacus, and Auto-DP that enables privacy-preserving training and inference of GNNs. **Received over 40 stars and 12 fork** on GitHub.
  - **Finalist** in CSAW Applied Research Competition for the best paper award in computer security in Europe.
  - **Received 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.

  - **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.

  - **Developed an experimental framework** to train and evaluate federated neural bandits under client heterogeneity using PyTorch and Flower for server-side simulation and Tensorflow-Lite for mobile clients.

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

  Worked in the Data Science and Machine Learning Lab on a range of research projects in the areas of privacy-preserving machine learning, web data science, and social and information network analysis.

  - **published four papers** in top-tier venues, including IEEE IoTJ, ACM TKDD, and TheWebConf, **with over 410 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 **full PhD studentship** from IBM-ILLINOIS Center for Cognitive Computing Systems Research and The Hong Kong University of Science and Technology.

Teaching Experience

- Lecturer
  International AI Doctoral Academy (AIDA), Online

  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

  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:** Privacy and Fairness in AI for Health (2023)
- **Program Committee:** AAAI PPAI (2024), ACM WiseML (2023), ICLR PAIR2Struct (2022), ICLR DPML (2021)
- **Reviewer:** IEEE TDSC (2023), LoG Conference (2023, 2022), AISTATS (2023), AIJ (2022), IEEE TBD (2021), ACM TIST (2020), SNAM (2020), WWW Journal (2018)

Skills and Expertise

- **Programming and Scripting Languages:** Python, Java, C++, Shell Scripting, SQL, LaTeX
- **Machine Learning & Data Analysis:** PyTorch, PyTorch-Geometric, Tensorflow, Tensorflow-Lite, OpenMMLab, HuggingFace, Scikit-Learn, Pandas, Numpy
- **MLOps & Related Technologies:** Weights & Biases, PyTorch-Lightning, Dask, Git, GitHub, Linux, Docker
- **Privacy-Enhancing Technologies:** Flower, Opacus, Auto-DP

Publications

- Sina Sajadmanesh and Daniel Gatica-Perez
  ProGAP: Progressive Graph Neural Networks with Differential Privacy Guarantees
  ACM International Conference on Web Search and Data Mining **(WSDM)**, March 2024

- Sina Sajadmanesh and Daniel Gatica-Perez
  Privacy-Preserving Machine Learning on Graphs
  Ecole Polytechnique Fédérale de Lausanne **(PhD Thesis)**, 2023

- 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)**, Aug 2023

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

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

- 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 **(IoTJ)**, May 2020

- 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 **(TKDD)**, Aug 2019

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

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

- Sina Sajadmanesh, Hamid R. Rabiee and Ali Khodadadi
  Predicting Anchor Links between Heterogeneous Social Networks
  International Conference on Advances in Social Networks Analysis and Mining **(ASONAM)**, Aug 2016