

Meisam Mohammady

CONTACT INFORMATION	Department of Computer Science Iowa State University https://www.cs.iastate.edu/people/meisam-mohammady/	Address: 2434 Osborn Dr Ames, IA 50011 E-Mail: meisam@iastate.edu
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RESEARCH INTERESTS	Differential Privacy, Secure Federated Learning, Anonymity, Computational Learning Theory, Secure Multiparty Computation, Fairness
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EDUCATION	Concordia University, Montréal, Canada Ph.D. in <i>Information Systems Engineering</i> November 2020 Dissertation: Novel Approaches to Preserving Utility in Privacy Enhanced Technologies <i>Distinguished Doctoral Dissertation Prize Winner in the Category of the Natural Science and Engineering</i> Advisors: Prof. Lingyu Wang & Prof. Yuan Hong École Polytechnique de Montréal, Montréal, Canada M.Sc. in <i>Electrical & Computer Engineering</i> May 2015 Thesis: Differentially Private Event Stream Filtering with an Application to Traffic Estimation Advisor: Prof. Jerome Le Ny Sharif University of Technology B.Sc. in <i>Electrical & Computer Engineering</i> September 2012 Thesis: Backstepping Controlling of Four-wheel Mobile Robots Advisor: Prof. Mehrzad Namvar
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PROFESSIONAL EXPERIENCE	Assistant Professor October 2022 to Present Department of Computer Science Iowa State University, Ames, IA, USA Research Scientist October 2020 to October 2022 Data61 CSIRO, Sydney, Australia Research Assistant May 2015 to September 2020 Ericsson Research Canada Concordia University, Montréal, QC, Canada Research Assistant January 2013 to 2015 The Group for Research in Decision Analysis (GERAD) Department of Electrical Engineering Ecole Polytechnique Montréal, Montréal, QC, Canada
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RESEARCH GRANTS	Awarded Grants <ul style="list-style-type: none">• Data 61 PhD Scholarship Grant “Sub-optimal but Comprehensive Approach for AI with Differential Privacy and Fairness”
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Role: **PI**. Project Duration: 08/01/2021-08/31/2025. Awarded Amount: \$55,000 per annum

• **Vacation Students Scholarship Grant**

“Utility-driven Statistical Inference Engine with Local Differential Privacy”

Role: **PI**. Project Duration: 12/01/2021-03/31/2022. Awarded Amount: \$22,000 (CSIRO Data 61, Pawsey Supercomputing)

REFEREED
PUBLICATIONS

- [1] **Meisam Mohammady**, Momen Oqaily, Lingyu Wang, Yuan Hong, Habib Louafi, Makan Pourzandi and Mourad Debbabi. “A Multi-view Approach to Preserve Both Privacy and Utility in Network Trace Anonymization.” *ACM Transactions on Privacy and Security (TOPS)* (formerly known as *TISSEC*), Accepted, 2020.
- [2] Shangyu Xie, **Meisam Mohammady**, Han Wang, Yuan Hong, Lingyu Wang, and Jaideep Vaidya. “Generalizing Prefix-Preserving Data Outsourcing: Ensuring both Privacy and Utility.” *IEEE Transactions on Knowledge and Data Engineering (TKDE)*, Accepted, 2020.
- [3] **Meisam Mohammady**, Shangyu Xie, Yuan Hong, Mengyuan Zhang, Lingyu Wang, Makan Pourzandi, Mourad Debbabi. “R²DP: A Universal and Automated Approach to Optimizing the Randomization Mechanisms of Differential Privacy for Utility Metrics with No Known Optimal Distributions.” *ACM Conference on Computer and Communications Security (CCS’ 20)*, Accepted, 2020 [Acceptance rate: 11%].
- [4] Momen Oqaily, Yosr Jarraya, **Meisam Mohammady**, Suryadipta Majumdar, Lingyu Wang, Makan Pourzandi and Mourad Debbabi, “SegGuard: Protecting Audit Data Using Segmentation-based Anonymization for Multi-tenant Cloud Auditing.” *IEEE Transactions on Dependable and Secure Computing (TDSC)*, Published, 2019 [impact factor: 6.864].
- [5] Bingyu Liu, Shangyu Xie, Han Wang, Yuan Hong, Xuegang Ban, **Meisam Mohammady**. “VTDP: Privately Sanitizing Fine-grained Vehicle Trajectory Data with Boosted Utility.” *IEEE Transactions on Dependable and Secure Computing (TDSC)*, Published, 2019 [impact factor: 6.864].
- [6] Suryadipta Majumdar, Azadeh Tabiban, **Meisam Mohammady**, Alaa Oqaily, Yosr Jarraya, Makan Pourzandi, Lingyu Wang and Mourad Debbabi. “Proactivizer: Transforming Existing Verification Tools into Efficient Solutions for Runtime Security Enforcement.” In *Proceedings of the 24th European Symposium on Research in Computer Security (ESORICS’ 19)*, Published, 2019, [Acceptance rate: 19.5%].
- [7] Suryadipta Majumdar, Azadeh Tabiban, **Meisam Mohammady**, Alaa Oqaily, Yosr Jarraya, Makan Pourzandi, Lingyu Wang and Mourad Debbabi. “Multi-Level Proactive Security Auditing for Clouds.” In *Proceedings of the 2019 IEEE Conference on Dependable and Secure Computing (DSC’ 19)*, Published 2019.
- [8] **Meisam Mohammady**, Lingyu Wang, Yuan Hong, Habib Louafi, Makan Pourzandi and Mourad Debbabi. “Preserving Both Privacy and Utility in Network Trace Anonymization.” In *Proceedings of the 25th ACM Conference on Computer and Communications Security (CCS’ 18)*, Published, 2018 [Acceptance rate: 16.5%].
- [9] Jerome Le Ny and **Meisam Mohammady**. “Differentially private MIMO filtering for event streams.” *IEEE Transactions on Automatic Control*, Published, 2018 [impact factor: 5.625].
- [10] Jerome Le Ny and **Meisam Mohammady**. “Differentially private MIMO filtering for event streams and spatio-temporal monitoring.” In *Proceedings of the 53rd IEEE Conference on Decision and Control (CDC’ 14)*, Published, 2014 [H Index: 118].

UNDER
REVIEW &
SUBMISSION

- [1] Kane Walter, **Meisam Mohammady**, Surya Nepal and Salil Kanhere. “No Free Lunch in Federated Learning: Larger Model Size Increases Backdoor Attack Surface.” *IEEE Transactions on Dependable and Secure Computing (TDSC’ 22)*, Under Review.
 - [2] **Meisam Mohammady**, Han Wang, Yuan Hong, Mengyuan Zhang, Suryaipta Majumdar, Lingyu Wang, Makan Pourzandi and Mourad Debbabi. “DPOAD: Differentially Private Outsourcing of Anomaly Detection with Optimal Sensitivity Learning.” *ACM Conference on Computer and Communications Security (CCS’ 22)*, Under Review.
 - [3] **Meisam Mohammady**, Dongxi Liu, Surya Nepal and Salil Kanhere. “Accurate Statistical Inference in Piece-wise Applications Under Differential Privacy.” *44rd IEEE Symposium on Security and Privacy S&P’ 23*, To be Submitted.
 - [4] **Meisam Mohammady**, Surya Nepal and Salil Kanhere. “Sub-optimal Tool for AI with Differential Privacy and Fairness.” *Thirty-sixth Conference on Neural Information Processing Systems NeurIPS’ 22*, To be Submitted.
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PATENTS

- [1] **Meisam Mohammady**, Yosr Jarraya, Lingyu Wang, Mourad Debbabi and Makan Pourzandi. “Partition-based prefix preserving anonymization approach for network traces containing ip addresses.” *US Patent App. 16/477,428, 2019*, Published 2019.
 - [2] **Meisam Mohammady**, Shangyu Xie, Yuan Hong, Mengyuan Zhang, Lingyu Wang, Makan Pourzandi and Mourad Debbabi. “R²DP: Randomizing the Randomization Parameters in Differentially Private Mechanisms.” *US Patent*, filed 2019.
 - [3] **Meisam Mohammady**, Han Wang, Yuan Hong, Mengyuan Zhang, Suryaipta Majumdar, Lingyu Wang, Makan Pourzandi and Mourad Debbabi. “DPOD: Differentially Private Outsourcing of Anomaly Detection.” *US Patent*, Under Review, 2020.
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SUPERVISION

Mr. Kane Walter Ph.D., the University of New South Wales jointly with Dr. Surya Nepal and Dr. Salil Kanhere
Mr. Gnanakumar Thedchanamoorthy Ph.D., the Charles Sturt University jointly with Dr. Zahid Islam
Mr. Thirasara Ariyaratna Ph.D., the University of New South Wales jointly Co-supervisors: Dr. Salil Kanhere Dr. Qinghua Lu, CSIRO’s Data61 and Dr. Helen Paik, Commenced in October 2020.
Hrishi Masurkar Honorary, the University of New South Wales jointly with Dr. Clement Cannone

INVITED TALKS

- [1] “Preserving Both Privacy and Utility in Network Trace Anonymization”, Université du Québec à Montréal (UQAM), Montréal, Canada, November 22, 2019
- [2] “R²DP: A Universal Approach to Optimizing the Randomization Mechanisms of Differential Privacy for Utility Metrics with No Known Optimal Distributions”, Université du Québec à Montréal (UQAM), Montréal, Canada, November 22, 2019
- [3] “DP-IDS: Differentially Private Intrusion Detection System”, Security, Privacy and Forensics (SPF) seminars, Montréal, Canada, May 10, 2019

- [4] “R²DP: A Universal Approach to Optimizing the Randomization Mechanisms of Differential Privacy for Utility Metrics with No Known Optimal Distributions”, The CSIRO, Data61 Reading seminar, Sydney, Australia, November 22, 2020
- [5] Novel Approaches to Preserving Utility in Privacy Enhancing Technologies, Discovery Partners Institute (DPI) RD Seminar, Chicago, IL, USA, September 9, 2021
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DEMONSTRATIONS “Preserving Both Privacy and Utility in Network Trace Anonymization”, Ericsson Security Research, Montréal, Canada, May, 2018

“R²DP: A Universal and Automated Approach to Optimizing the Randomization Mechanisms of Differential Privacy for Utility Metrics with No Known Optimal Distributions”, Ericsson Security Research, Montréal, Canada, October, 2019

“DPOAD: Differentially Private Outsourcing of Anomaly Detection with Optimal Sensitivity Learning”, Ericsson Security Research, Montréal, Canada, October, 2020

AWARDS Recognized as Global Talent by Australian Government and Being Granted with Citezinship 2021

PhD Dissertation selected as Concordia University nominee for both of CAGS and ADESAQ Competitions 2021

Distinguished PhD Dissertation Awards, Concordia University 2020

Student Travel Grant/Award 2018, 2019

Tuition Award of Excellence (\$ 41,313), Concordia University 2017

Tuition Exemption Award (\$ 15,000), École Polytechnique Montréal 2014

PROFESSIONAL
ACTIVITIES

TPC Member

- The Journal Proceedings on Privacy Enhancing Technologies (PoPETs’21,22)
- IEEE Transactions on Dependable and Secure Computing (TDSC’ 19,20,21)
- the Thirty-Sixth AAAI Conference on Artificial Intelligence (AAAI’ 22)
- IEEE Transactions on Services Computing (TSC’ 21)

Publicity Chair

- The 2021-2 Privacy Enhancing Technologies Symposium (PETS 2021)
- The CRC Security Automation and Orchestration (SAO) Seminar Series 2021
- The 2021 workshop on Cloud S&P

Journal External Reviewer

- IEEE Transactions on Information Forensics and Security (TIFS)
- IEEE Transactions on Automatic Control
- Journal of Information Sciences
- Transaction on Management Information Systems
- IEEE Transactions on Parallel and Distributed Systems (TPDS)
- Information Systems Research (ISR), INFORMS
- Journal of Computer Security (JCS), IOS Press

Conference External Reviewer

- IEEE International Conference on Computer Communications (INFOCOM)

- The European Symposium on Research in Computer Security (ESORICS)
- IEEE International Conference on Data Engineering (ICDE)
- International Conference on Distributed Computing Systems (ICDCS)
- International Information Security and Privacy Conference (SEC)
- International Conference on Applied Cryptography and Network Security (ACNS)
- IEEE International Conference on Communications (ICC)
- IEEE Conference on Network Softwarization (IEEE NetSoft)
- IEEE International Conference on Cloud Networking (CloudNet)

Membership

- Association for Computing Machinery (ACM)
- Institute of Electrical and Electronics Engineers (IEEE)

TEACHING

University of Waterloo

CS 458/658 (Computer Security and Privacy): Instructor, Spring'21

Concordia University

INSE 6130 (Operating System Security): TA/POD, Winter'20

INSE 6620 (Cloud Computing Security and Privacy): TA/POD, Winter'18

INSE 6160 (Database Security and Privacy): Guest lecture, Summer'18

Sharif University Of Technology

Linear Control Systems: Fall'10, and Fall'12

Communication Systems I: Fall'11

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- MEDIA COVERAGE [1] Talk on "Preserving Both Privacy and Utility in Network Traces" appeared in ACM.
- [2] Talk on "R²DP: A Universal Approach to Optimizing the Randomization Mechanisms of Differential Privacy for Utility Metrics with No Known Optimal Distributions" appeared in ACM.

REFERENCES

Dr. Lingyu Wang

Professor and NSERC/Ericsson Senior Industrial Research Chair (IRC) in SDN/NFV Security, Concordia Institute for Information Systems Engineering (CIISE), Montréal, QC, Canada, E-Mail: wang@ciise.concordia.ca

Dr. Yuan Hong

Assistant Professor, Department of Computer Science and Engineering, University of Connecticut, CT 06269, IL, E-Mail: yuan.hong@uconn.edu

Dr. Makan Pourzandi

Research Leader, Ericsson Security Research Canada, and Affiliate Associate Professor at Concordia Institute for Information Systems Engineering (CIISE), Montréal, QC, Canada, E-Mail: makan.pourzandi@ericsson.com

Dr. Salil Kenhere

Professor, School of Computer Science and Engineering, UNSW, Sydney, E-Mail: salil.kanhere@unsw.edu.au