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Curriculum Vitae

Research Interests

Trustworthy Machine Learning, Differential Privacy, Algorithmic Fairness, Economics of Security and Privacy, Algorithmic Economics

Education

- 2019 **Ph.D. in Electrical Engineering and Computer Science**, *University of Michigan*, Ann Arbor, *GPA - 4.0*.
- **Dissertation:** "Incentive Mechanisms for Managing and Controlling Cyber Risks: The Role of Cyber Insurance and Resource Pooling" (Advisor: Mingyan Liu).
- 2018 **M.Sc. in Mathematics**, *University of Michigan*, Ann Arbor, *GPA - 4.0*.
- 2015 **M.Sc. in Electrical Engineering**, *Sharif University of Technology*, *GPA - 4.0 (18.96/20)*.
- **Thesis:** "Incentive Pricing Mechanism for Mobile User-Provided Networks" (Advisor: Prof. Khalaj).
 - Thesis was selected as the recipient of the 2015 Outstanding Master's Thesis Award.
- 2013 **B.Sc. in Electrical Engineering**, *Sharif University of Technology*, *GPA - 4.0 (18.24/20)*.

Employment

- 2020-Present **Assitant Professor, Computer and Information Sciences**, *University of Delaware*, Newark.
- 2020 **Postdoctoral Researcher, Electrical Engineering and Computer Science**, *University of California*, Berkeley.
- Mentor: Prof. Somayeh Sojoudi

Publications

Journal Papers

- 1 M. Khalili, X. Zhang, M. Liu, "Resource Pooling for Shared Fate: Incentivizing Effort in Interdependent Security Games through Cross-investments", *IEEE Transactions on Control of Network Systems*, 2020.
- 2 M. Khalili, M. Liu, S. Romanosky, "Embracing and Controlling Risk Dependency in Cyber Insurance Policy Underwriting", *Journal of Cyber Security*, 2019.
- 3 X. Zhang, M. Khalili, M. Liu, "Recycled ADMM: Improving the Privacy and Accuracy of Distributed Algorithms", *IEEE Transactions on Information Forensics and Security*, 2019.
- 4 X. Zhang, M. Khalili, M. Liu, "Long-term Impacts of Fair Machine Learning", *Ergonomics in Design: The Quarterly of Human Factors Applications*, 2019.
- 5 M. Khalili, P. Naghizadeh, M. Liu, "Designing Cyber Insurance Policies: The Role of Pre-Screening and Security Interdependence," *IEEE Transactions on Information Forensics and Security*, 2018.
- 6 H. Jebelli, M. Khalili, S. Lee, "A Continuously Updated, Computationally Efficient Stress Recognition Framework Using Electroencephalogram (EEG) by Applying Online Multi-Task Learning Algorithms (OMTL)", *IEEE Journal of Biomedical and Health Informatics*, 2018.

- 7 **M. Khalili**, X. Zhang, M. Liu, "Designing Contracts for Trading Private and Heterogeneous Data Using a Biased Differentially Private Algorithm", under review in IEEE Access.

Refereed Conference Papers

- 1 **M. Khalili**, X. Zhang, M. Abroshan, S. Sojoudi, "Privacy and Fairness Improvement in Selection Problems", the **AAAI** Conference on Artificial Intelligence, 2021.
- 2 K. Jin, **M. Khalili**, M. Liu, "Games on Networks with Community Structure: Existence, Uniqueness and Stability of Equilibria", American Control Conference (**ACC**), 2020.
(K. Jin was my mentee. The research was done during his master's study.)
- 1 X. Zhang*, **M. Khalili***, C. Tekin, M. Liu, "Group Retention when Using Machine Learning in Sequential Decision Making: the Interplay between User Dynamics and Fairness", The Conference on Neural Information Processing Systems (**NeurIPS**), 2019. (* indicates equal contribution.)
- 2 **M. Khalili**, X. Zhang, M. Liu, "Effective Premium Discrimination for Designing Cyber Insurance Policies with Rare Losses", The Conference on Decision and Game Theory for Security (**GameSec**), 2019.
- 3 **M. Khalili**, X. Zhang, M. Liu, "Using Resource Pooling to Obtain More Efficient Equilibrium in Interdependent Security Games", The Workshop on the Economics of Networks, Systems and Computation (**NetEcon**), 2019.
- 4 **M. Khalili**, X. Zhang, M. Liu, "Contract Design for Purchasing Private Data Using a Biased Differentially Private Algorithm", The Workshop on the Economics of Networks, Systems and Computation (**NetEcon**), 2019.
- 7 X. Zhang, **M. Khalili**, M. Liu, "Improving the Privacy and Accuracy of ADMM-Based Distributed Algorithms", International Conference on Machine Learning (**ICML**), 2018.
- 5 X. Zhang, **M. Khalili**, M. Liu, "Recycled ADMM: Improve Privacy and Accuracy with Less Computation in Distributed Algorithms", The Annual Allerton Conference on Communication, Control, and Computing, 2018.
- 6 **M. Khalili**, M. Liu, S. Romanosky, "Embracing and Controlling Risk Dependency in Cyber Insurance Policy Underwriting", The Annual Workshop on the Economics of Information Security (**WEIS**), 2018. (**Acceptance Rate: % 22**)
- 8 H. Jebelli, **M. Khalili**, S. Lee "Mobile EEG-based Workers' Stress Recognition by Applying Deep Neural Network," 35th CIB W78 Conference, 2018.
- 9 **M. Khalili**, P. Naghizadeh, M. Liu, "Embracing Risk Dependency in Designing Cyber-Insurance Contracts", The Annual Allerton Conference on Communication, Control, and Computing, 2017.
- 10 **M. Khalili**, P. Naghizadeh, M. Liu, "Designing Cyber Insurance Policies in the Presence of Security Interdependence", The Workshop on the Economics of Networks, Systems and Computation (**NetEcon**), 2017.
- 11 **M. Khalili**, P. Naghizadeh, M. Liu, "Designing Cyber Insurance Policies: Mitigating Moral Hazard Through Security Pre-Screening", The EAI International Conference on Game Theory for Networks (**GameNets**), 2017.
- 12 **M. Khalili**, L. Gao, J. Huang, B. Khalaj, "Incentive Design and Market Evolution of Mobile User-Provided Networks", Workshop of IEEE INFOCOM, 2015.

Invited Paper

- 1 **M. Khalili**, X. Zhang, M. Liu, "Public Good Provision Games on Networks with Resource Pooling", International Conference on Network Games, Control and Optimization (NetGCoop), 2018.

Teaching and Mentorship Experience

Winter 2021 **Instructor**, CISC106-General Computer Science for Engineers, University of Delaware.

Fall 2020 **Instructor**, CISC849-Economics of Security and Privacy, University of Delaware.

Winter 2019 **Graduate Student Instructor**, *EECS216-Signal and Systems*, Univeristy of Michigan.

- Fall 2017 **Graduate Student Instructor**, *EECS501-Probability and Random Processes*, University of Michigan.
- Winter 2017 **Graduate Student Instructor**, *EECS216-Signal and Systems*, University of Michigan.
- 2018 **Mentor**, University of Michigan, Ann Arbor, MI, USA.
- **Mentee:** Kun Jin, Master's student at the University of Michigan.
 - Taught basic principles of machine learning and game theory.
 - **Mentees:** Seven new undergraduate students at the University of Michigan.
 - Taught signal processing using Matlab.

Awards and Honors

- 2019 **NeurIPS Travel Grant**, Thirty-third Conference on Neural Information Processing Systems.
- 2019 **NSF Travel Grant**, The 2019 Workshop on the Economics of Information Security.
- 2019 **EC Travel Grant**, ACM conference on Economics and Computation.
- 2018 ECE Department Nominee for **the Richard and Eleanor Towner Prize for Outstanding Ph.D. Research**, College of Engineering, University of Michigan.
- Selected as ECE Department nominee for Richard and Eleanor Towner Prize, a college-level competition across all Departments that highlights the outstanding research achievements by Ph.D. students who are on track to graduate by 2019.
- 2018 **Rackham Travel Grant**, University of Michigan.
- 2017 **Poster Award** (Second Place), Engineering Graduate Symposium, University of Michigan.
- 2015 **Rackham Scholarship**, University of Michigan.
- 2015 **Outstanding Master's Thesis Award**, Electrical Engineering Department, Sharif University of Technology.
- A highly prestigious award established by electrical engineering department to recognize the most exceptional work by master's students.
- 2015 **First Rank**, Sharif University of Technology.
- Highest GPA among all Electrical Engineering graduate students.
- 2013 **Outstanding Undergraduate Thesis Award**, Sharif University of technology.
- 2013 **First Rank**, Sharif University of Technology.
- Highest GPA among all Electrical Engineering undergraduate students.
- 2009 **37th Rank** (top 0.01%) among more than 350,000 participants, the National Wide University Entrance Examination for Bachelor Degree, Iran.

Invited Talks

- 2020 "Mechanism Design for Trading Privacy", UC Berkeley.
- 2019 "Using Resource Pooling to Obtain More Efficient Equilibrium in Interdependent Security Games", Annual meeting with the Department of Defense's Multidisciplinary Research Initiative Program (MURI), University of Michigan.
- 2018 "Public Good Provision Games on Networks with Resource Pooling", International Conference on Network Games, Control and Optimization (NetGCoop).

Training and Workshop Participation

- 2019 NextProf Workshop, University of Michigan, Ann Arbor, MI, U.S.
- This was a workshop for selected research fellows and doctoral students at the University of Michigan to network with deans, administrators and faculty across the country to share best practices for successfully seeking an academic job.

- 2019 What's Next? Career Paths for Ph.Ds. in STEM, Rackham Interdisciplinary Workshops, University of Michigan, Ann Arbor, MI, U.S.
 - Full-day workshop for selected doctoral students to engage in skill and career exploration, gain insights into a variety of career paths through conversations with featured presenter Melanie Sinche, author of NextGen Ph.D.: A Guide to Career Paths in Science.
- 2018 Training for Diversity and Inclusive Teaching, Center for Research on Learning and Teaching (CRLT), University of Michigan, Ann Arbor, MI, U.S.
 - A four-week workshop that provided participants the opportunity to learn about and practice a range of effective facilitation strategies for use in classrooms.
- 2018 Evaluating Student Writing, Center for Research on Learning and Teaching (CRLT), University of Michigan, Ann Arbor, MI, U.S.
 - In this workshop, we learned how to alleviate instructor and student anxiety surrounding the evaluation process by discussing the use of specific criteria for grading student writing.
- 2018 Implementing Inclusive Teaching Principles in Your Courses, Center for Research on Learning and Teaching (CRLT), University of Michigan, Ann Arbor, MI, U.S.
 - In this activities-based workshop, instructors experienced and reflected on teaching strategies for helping students engage and learn across their differences, as well as for introducing course material in ways that productively draw upon students' various backgrounds and perspectives.
- 2018 Teaching a Great Lab Class, Center for Research on Learning and Teaching (CRLT), University of Michigan, Ann Arbor, MI, U.S.
 - Presenters at this workshop shared strategies to better prepare for leading a lab section and efficiently manage student questions.

Certificates

- 2019 Graduate Teaching Certificate, Center for Research on Learning and Teaching (CRLT), University of Michigan
- 2019 Certificate of Training for Diversity and Inclusive Teaching, Center for Research on Learning and Teaching (CRLT), University of Michigan, Ann Arbor, MI.

Services

Reviewer

- 2021 International Conference on Learning Representations (ICLR)
- 2020 Conference on Neural Information Processing Systems (NeurIPS)
- 2020 IEEE Transactions on Signal Processing (TSP)
- 2019-2020 IEEE/ACM Transaction on Networking (ToN)
- 2018–2020 IEEE Transaction on Information Forensics and Security (TIFS)
- 2019 International Joint Conference on Artificial Intelligence
- 2018–2020 The American Control Conference (ACC)
- 2018–2020 IEEE Conference on Decision and Control (CDC)
- 2016 IEEE GLOBCOM

Professional Committees

- 2017 Session Chair for Senior Research Poster Session, Engineering Graduate Symposium (EGS), University of Michigan, Ann Arbor, MI, U.S.
- 2017 Instructor and Planning Committee Member, Discover Engineering, College of Engineering, University of Michigan, Ann Arbor, MI, U.S.
 - The program is a two-day workshop for alumni and their 8th-10th grade children to experience engineering disciplines.