

Farhad Shirani Chaharsooghi

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CURRENT APPOINTMENT	New York University , New York, NY <ul style="list-style-type: none">Research Assistant Professor	Sep. 2017-Present
PREVIOUS APPOINTMENTS	University of Michigan , Ann Arbor, MI <ul style="list-style-type: none">Lecturer/ Postdoctoral Research Fellow	Jan 2017- Aug 2017
EDUCATION	University of Michigan , Ann Arbor, MI <ul style="list-style-type: none">Ph.D., Electrical Engineering: Systems, Advisor: S. Sandeep Pradhan Ph.D. Thesis: Structural Results for Coding Over Communication Networks GPA: 4.002012-2017M.Sc., Mathematics, Major: Applied Mathematics GPA: 4.002014-2016M.Sc., Electrical Engineering: Systems, Major: Communications GPA: 4.002011-2012 Sharif University of Technology , Tehran, Iran <ul style="list-style-type: none">B.Sc., Electrical Engineering, B.Sc., Thesis: A New Method for Variable Elimination for Systems of Inequations Advisor: M. R. Aref2007-2011	
RESEARCH INTERESTS	Privacy and Security, Wireless Communications, Information Theory, Learning Theory	
RESEARCH EXPERIENCE	New York University , Brooklyn, NY <ul style="list-style-type: none">Research Assistant Professor, Member at NYU WIRELESS University of Michigan , Ann Arbor, MI <ul style="list-style-type: none">Postdoctoral Research Fellow,Graduate Student Research Assistant, Advisor: Sandeep Pradhan Sharif University of Technology , Tehran, Iran	Sep 2017-Present Jan 2017-Aug 2017 2012-2016

	<ul style="list-style-type: none"> Member of Information Science and Security Lab Advisor: Mohammadreza Aref 	2010-2012
RESEARCH SUPPORT	<p><i>CIF: Small: An Information Theoretic Framework for Web Privacy</i>, Investigators: E. Erkip, F. Shirani Chaharsooghi, S. Garg, NSF: Communications and Information Foundations, Amount Awarded: \$487,000</p>	2018-2021
TEACHING EXPERIENCE	<p>New York University, Brooklyn, NY</p> <ul style="list-style-type: none"> Course Instructor, EL-GY 6063: Information Theory Course Instructor, EL-GY 9113: Statistical Learning Theory <p>University of Michigan, Ann Arbor, MI</p> <ul style="list-style-type: none"> Course Instructor EECS:501 Probability and Random Processes Graduate Student Instructor EECS:501 Probability and Random Processes <p>Sharif University of Technology, Tehran, Iran</p> <ul style="list-style-type: none"> Teaching Assistant, Introduction to Logic Circuits 	<p>Spring 2018, Spring 2019</p> <p>Spring 2020</p> <p>Winter 2017</p> <p>Fall 2014, Winter 2015</p> <p>Winter 2009</p>
AWARDS AND HONORS	<ul style="list-style-type: none"> Finalist of Towner Award for Outstanding Engineering GSIs, This is an engineering school-wide award for graduate teaching instructors (GSI). Technical Session Award, Systems Engineering and Communication, Engineering Graduate Symposium, This is a college-wide annual poster competition at the University of Michigan. EECS Department Graduate Fellowship, University of Michigan This fellowship is awarded to students with outstanding academic background. It includes tuition and stipend for one year. EECS Guaranteed Graduate Funding, University of Michigan This award includes guaranteed tuition and stipend for five years in forms of research or teaching assistantships, or departmental fellowships. Ranked 27th, National university entrance exam among more than 150,000 contestants, Iran's National Elites Foundation Scholarship Members of INEF include students and faculty who have been recipients of scientific prizes in national competitions. President's Honorary Award Presented by president of Sharif University of Technology 	<p>Winter 2015</p> <p>Fall 2015</p> <p>2013</p> <p>2012-2016</p> <p>Fall 2007</p> <p>2007-2010</p> <p>Fall 2007</p>

INVITED TALKS

- “Fundamental Limits and Matching Algorithms for Online Fingerprinting and Database Alignment”, GRAND Workshop in Maynooth University, Ireland, 2019
- “Social network de-anonymization based on group memberships: An information theoretic approach”, ITA Workshop in UCSD, 2018
- “On the Structure of Optimality Achieving Codes in Multi-terminal Communications”, ITA Graduation Day Talk, Nominated by the University of Michigan to present during “Graduation Day”, ITA Workshop in UCSD, 2017
- “Preserving Common Information”, SPeeCS Seminars Series, University of Michigan, 2016
- “Distributed Source Coding in Absence of Common Components”, Stanford University, Feb. 2014
- “Distributed Source Coding in Absence of Common Components”, DSSD, Menlo Park, CA, 2014

TUTORIAL PRESENTATIONS

- “An Information Theoretic Framework for Web Privacy”, 2019 IEEE 30th Annual International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC)
- “A Communication Theoretic Framework for Web Privacy”, 2019 IEEE Global Communications Conference (Globecom)

WORKSHOPS AND POSTER PRESENTATIONS

- “Finite Block-Length Codes Trump Random Coding over Infinite Length Blocks”, (poster), Shannon Centennial Symposium, University of Michigan, Sep 2016
- “Finite Block-length Gains in Distributed Source Coding”, (poster), North American School of Information theory (NASIT) San Diego, CA, Aug 2015

PUBLICATIONS, SUBMISSIONS AND PREPRINTS

Journals: Accepted Papers

- [J1] **F. Shirani Chaharsooghi**, S. Pradhan, *On the Sub-optimality of Single-Letter Coding in Networks*, IEEE Transactions on Information Theory, vol. 65, no. 10, pp. 6115-6135, Oct. 2019.
- [J2] H. Heidari, **F. Shirani Chaharsooghi**, S. Pradhan, *Quasi Structured Codes for Multi-Terminal Communications*, IEEE Transactions on Information Theory, vol. 65, no. 10, pp. 6263-6289, Oct. 2019.
- [J3] S. Shahsavari, **F. Shirani Chaharsooghi**, E. Erkip, *A General Framework for Temporal Fair User Scheduling in NOMA Systems*, IEEE Journal on Selected Topics on Signal Processing, vol. 13, no. 3, pp. 408-422, 2019.
- [J4] **F. Shirani Chaharsooghi**, S. Pradhan, *An achievable rate-distortion region for multiple descriptions source coding based on coset codes*, IEEE Transactions on Information Theory, vol. 64, no. 5, pp. 3781-3809, 2018.

Journals: Preprints/Working Papers

- [J5] **F. Shirani Chaharsooghi**, S. Pradhan, *A New Achievable Rate-Distortion Region for Distributed Source Coding*, submitted to IEEE Transactions on Information Theory (earlier version appeared in [C23,25]).
- [J6] A. Khalili, **F. Shirani Chaharsooghi**, E. Erkip, Y. C. Eldar, *On MIMO Communication with Low Resolution Quantization at the Receivers*, to be submitted to IEEE Transactions on Wireless Communications (earlier version appeared in [C3,4]).

- [J7] **F. Shirani Chaharsooghi**, S. Garg, E. Erkip, *A Concentration of Measure Approach to Matching of Correlated Graphs*, to be submitted to IEEE Transactions on Information Theory (earlier version appeared in [C6,9,12]).
- [J8] **F. Shirani Chaharsooghi**, S. Pradhan, *Lattices from linear codes and fine quantization: general continuous sources and channels*, to be submitted to IEEE Transactions on Information Theory (earlier version appeared in [C8,24]).

Conference Publications

- [C1] S. Shahsavari, **F. Shirani Chaharsooghi**, A. Khojastepour, E. Erkip, *Opportunistic Temporal Fair Mode Selection and User Scheduling for Full-duplex Systems*, 2019 IEEE 30th Annual International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC), Accepted: June 2019.
- [C2] **F. Shirani Chaharsooghi**, S. Garg, E. Erkip, *A Concentration of Measure Approach to Database De-anonymization*, 2019 IEEE International Symposium on Information Theory (ISIT), pp. 2748-2752, 2019.
- [C3] A. Khalili, **F. Shirani Chaharsooghi**, E. Erkip, Y. C. Eldar, *Tradeoff Between Delay and High SNR Capacity in Quantized MIMO Systems*, 2019 IEEE International Symposium on Information Theory (ISIT), pp. 597-601, 2019.
- [C4] A. Khalili, **F. Shirani Chaharsooghi**, E. Erkip, Y. C. Eldar, *On Multiterminal Communication over MIMO Channels with One-bit ADCs at the Receivers*, 2019 IEEE International Symposium on Information Theory (ISIT), pp. 602-606, 2019.
- [C5] S. Shahsavari, **F. Shirani Chaharsooghi**, E. Erkip, *On the Fundamental Limits of Multi-user Scheduling under Short-term Fairness Constraints*, 2019 IEEE International Symposium on Information Theory (ISIT), pp. 408-422, 2019.
- [C6] **F. Shirani Chaharsooghi**, S. Garg, E. Erkip, *Matching graphs with community structure: a concentration of measure approach*, 56th IEEE Annual Allerton Conference on Communication, Control, and Computing, pp. 1028-1035, 2018
- [C7] S. Shahsavari, **F. Shirani Chaharsooghi**, E. Erkip, *Opportunistic temporal fair scheduling for non-orthogonal multiple access*, 56th IEEE Annual Allerton Conference on Communication, Control, and Computing, pp. 391-398, 2018
- [C8] **F. Shirani Chaharsooghi**, S. Pradhan, *Lattices from linear codes and fine quantization: general continuous sources and channels*, IEEE International Symposium on Information Theory (ISIT), pp. 2356-2360, 2018.
- [C9] **F. Shirani Chaharsooghi**, S. Garg, E. Erkip, *Typicality matching for pairs of correlated graphs*, IEEE International Symposium on Information Theory (ISIT), pp. 221-225, 2018.
- [C10] M. Heidari, **F. Shirani Chaharsooghi**, S. Pradhan, *Bounds on the effective-length of optimal codes for interference channel with feedback*, IEEE International Symposium on Information Theory (ISIT), pp. 1126-1130, 2018.
- [C11] **F. Shirani Chaharsooghi**, S. Garg, E. Erkip, *Optimal active social network de-anonymization using information thresholds*, IEEE International Symposium on Information Theory (ISIT), pp. 1445-1449, 2018.

- [C12] **F. Shirani Chaharsooghi**, S. Garg, E. Erkip, *Seeded graph matching: efficient algorithms and theoretical guarantees*, 51st Asilomar Conference on Signals, Systems, and Computers, pp. 253-257, 2017.
- [C13] **F. Shirani Chaharsooghi**, S. Garg, E. Erkip, *An information theoretic framework for active de-anonymization in social networks based on group memberships*, 55th Annual Allerton Conference on Communication, Control, and Computing, pp. 470-477, 2017.
- [C14] **F. Shirani Chaharsooghi**, S. Pradhan, *On the sub-optimality of single-letter coding in multi-terminal communications*, IEEE International Symposium on Information Theory (ISIT), pp. 1823-1827, 2017.
- [C15] **F. Shirani Chaharsooghi**, S. Pradhan, *On the correlation between boolean functions of random variables*, IEEE International Symposium on Information Theory (ISIT), pp. 1301-1305, 2017.
- [C16] M. Heidari, **F. Shirani Chaharsooghi**, S. Pradhan, *A new achievable rate region for the multiple-access channel with states*, IEEE International Symposium on Information Theory (ISIT), pp. 36-40, 2017.
- [C17] M. Heidari, **F. Shirani Chaharsooghi**, S. Pradhan, *On the necessity of structured codes for communication over MAC with feedback*, IEEE International Symposium on Information Theory (ISIT), pp. 2298-2302, 2017.
- [C18] **F. Shirani Chaharsooghi**, S. Pradhan, *Trade-off between communication and cooperation in the interference channel*, IEEE International Symposium on Information Theory (ISIT), pp. 2214-2218, 2016.
- [C19] **F. Shirani Chaharsooghi**, M. Heidari, S. Pradhan, *Quasi linear codes: application to point-to-point and multi-terminal source coding*, IEEE International Symposium on Information Theory (ISIT), pp. 730-734, 2016.
- [C20] M. Heidari, **F. Shirani Chaharsooghi**, S. Pradhan, *New sufficient conditions for multiple-access channel with correlated sources*, IEEE International Symposium on Information Theory (ISIT), pp. 2019-2023, 2016.
- [C21] M. Heidari, **F. Shirani Chaharsooghi**, S. Pradhan, *Beyond group capacity in multi-terminal communications*, IEEE International Symposium on Information Theory (ISIT), pp. 2081-2085, 2015.
- [C22] **F. Shirani Chaharsooghi**, M. Heidari, S. Pradhan, *New lattices for multiple-descriptions*, IEEE International Symposium on Information Theory (ISIT), pp. 1580-1584, 2015.
- [C23] **F. Shirani Chaharsooghi**, S. Pradhan, *Finite-length gains in distributed source coding*, IEEE International Symposium on Information Theory (ISIT), pp. 1702-1706, 2014.
- [C24] **F. Shirani Chaharsooghi**, S. Pradhan, *An achievable rate-distortion region for the multiple-descriptions problem*, IEEE International Symposium on Information Theory (ISIT), pp. 576-580, 2014.
- [C25] **F. Shirani Chaharsooghi**, A. Ghasemian Sahebi, S. Pradhan, *Distributed source coding in absence of common components*, IEEE International Symposium on Information Theory (ISIT), pp. 1362-1366, 2013.

- [C26] **F. Shirani Chaharsooghi**, M. Emadi, M. Zamanighomi and M. R. Aref, *A new method for variable elimination in systems of inequations*, IEEE International Symposium on Information theory (ISIT), pp. 1215-1219, 2011.
- [C27] M. Zamanighomi, M. Emadi, **F. Shirani Chaharsooghi**, M. R. Aref, *Achievable rate region for multiple access channel with correlated channel states and cooperating encoders*, IEEE Information Theory Workshop (ITW), pp. 628-632, 2011.

SERVICE

- **Outreach Committee Member:** Information Theory Society, 03/22/18 until 12/31/20.
- **Reviewer:** IEEE Transactions on Information Theory, IEEE Transactions on Communications, Iran Workshop on Communication and Information Theory, International Symposium on Information Theory.
- **Co-Chair** for two sessions, Multiple Access Channels, Multiuser Information Theory, and Network Information Theory, ITA 2015

REFERENCES

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