

Ali Eslami

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Education

- Ph.D., Electrical and Computer Engineering Feb. 2013
University of Massachusetts Amherst, Amherst, MA
Thesis: *A Non-Asymptotic Approach to the Analysis of Communication Networks: From Error Correcting Codes to Network Properties*
Advisor: Prof. Hossein Pishro-Nik
- M.Sc., Electrical Engineering Sept. 2006
Sharif University of Technology, Tehran, Iran
Thesis: *Analysis of Network Coding in Wireless Networks*
Advisor: Prof. B. H. Khalaj
- B.Sc., Electrical Engineering Sept. 2004
Sharif University of Technology, Tehran, Iran
Thesis: *Investigating ISI in Digital Modulation Techniques*
Advisor: Prof. M. H. Bastani

Work Experience

- Assistant Professor, Dept. of Electrical Engineering and Computer Science July 2015-Present
Wichita State University, Wichita, KS
- Visiting Research Scholar, Information Initiative at Duke (iiD) Aug. 2014-Jun. 2015
Duke University, Durham, NC
Supervisor: Prof. Robert Calderbank
- Post-Doctoral Research Associate, Electrical and Computer Engineering Mar. 2013-Apr. 2015
Texas A&M University, College Station, TX
Supervisor: Prof. Shuguang Cui (TAMU), Prof. Junshan Zhang (ASU)

Honors & Awards

- Wichita State University's Young Faculty Risk-Taker Award, May 2017.
- Outstanding Teaching Assistant Award of ECE Department, University of Massachusetts Amherst, May 2011.
- Iran's National Electrical Engineering Olympiad Finalist (ranked 9th), June 2004.
- Ranked 43rd among 430,000 in Iran's national university entrance exam, June 2000.

Research Interests

- Modeling and performance analysis of cyber-physical systems.
- Error control coding and its applications in communications, data storage, and biological systems.
- Learning from big data for resilience in multi-layer interconnected networks.
- Micro- and nano-scale communications.
- Internet of things; design and analysis of wireless networks.

Funding

NSF EPSCoR FIRST Award, May 2018-July 2019.

Wichita State University's Multidisciplinary Research Project Award (MURPA), May-Aug. 2018.

Flossie E. West Memorial Foundation Award for cancer research, May 2016-Aug. 2018.

Wichita State University's Research/Creative Projects Award, Dec. 2015-Dec. 2016.

Publications

Preprints:

1. M. Okwori, A. Behfarnia, P. Vuka, and **A. Eslami**, "A Micro-Scale Mobile-Enabled Implantable Medical Sensor," submitted to *IEEE Trans. on Molecular, Biological, and Multi-Scale Communications*, June 2018.
2. M. Nadji-Tehrani and **A. Eslami**, "An Artificially-Induced Neuroembryogenesis Framework for Regenerative Brain Simulations," submitted to *IEEE Trans. on Neural Networks and Learning Systems*, Jan. 2018.

Journals:

3. A. Behfarnia and **A. Eslami**, "Error Correction Coding Meets Cyber-Physical Systems: Message-Passing Analysis of Self-Healing Interdependent Networks," *IEEE Transactions on Communications*, Vol. 65, No. 7, pp. 2753-2768, Jul. 2017.
4. D. Lv, **A. Eslami**, and S. Cui, "Load-Dependent Cascading Failures in Finite-Size Erdős-Rényi Random Networks," *IEEE Transactions on Network Science and Engineering*, Vol. 4, No. 2, pp. 129-139, Apr.-Jun. 2017.
5. **A. Eslami**, C. Huang, J. Zhang, and S. Cui, "Cascading Failures in Load-Dependent Finite-Size Random Geometric Networks," *IEEE Transactions on Network Science and Engineering*, Vol. 3, No. 4, pp. 183-196, Oct.-Dec. 2016.
6. **A. Eslami**, M. Nekoui, H. Pishro-Nik, and F. Fekri, "Results on Finite Wireless Sensor Networks: Connectivity and Coverage," *ACM Transactions on Sensor Networks*, Vol. 9, No. 4, pp. 1-22, June 2013.
7. **A. Eslami** and H. Pishro-Nik, "On Finite-Length Performance of Polar Codes: Stopping Sets, Error Floor, and Concatenated Design," *IEEE Transactions on Communications*, Vol. 61, No. 3, pp. 919-929, Mar. 2013.
8. **A. Eslami**, M. Nekoui, and H. Pishro-Nik, "Results on Finite Wireless Networks on A Line," *IEEE Transactions on Communications*, Vol. 58, No. 8, pp. 2204-2211, Aug. 2010.
9. **A. Eslami**, S. Vangala, and H. Pishro-Nik, "Hybrid Channel Codes for Efficient FSO/RF Communication Systems," *IEEE Transactions on Communications*, Vol. 58, No. 10, pp. 2926-2938, Oct. 2010.

Conferences:

10. A. Behfarnia, and **A. Eslami**, "Risk Assessment of Autonomous Vehicles Using Bayesian Defense Graphs," in *Proc. IEEE Vehicular Technology Conference*, Chicago, IL, USA, Aug. 2018.

11. P. Vuka, A. Behfarnia, and **A. Eslami**, “A Mobile-Enabled Micro Communication Device for Biosensing,” in *Proc. IEEE Nano '17*, Pittsburg, PA, USA, Jul. 2017.
12. A. Behfarnia and **A. Eslami**, “Dynamics and Steady-State Behavior of Self-Healing Cyber-Physical Networks in Light of Cyber-Node Delays,” in *Proc. IEEE Global Communications Conference (GLOBECOM)*, Washington, D.C., USA, Dec. 2016.
13. A. Behfarnia and **A. Eslami**, “Message Passing for Analysis and Resilient Design of Self-Healing Interdependent Cyber-Physical Networks,” in *Proc. 25th IEEE International Conference on Computer Communications and Networks (ICCCN)*, Waikoloa, Hawaii, USA, Aug. 2016.
14. **A. Eslami**, A. Velasco, A. Vahid, G. Mappouras, R. Calderbank, and D. Sorin, “Writing without Disturb on Phase Change Memories by Integrating Coding and Layout Design,” in *Proc. International Symposium on Memory Systems (MEMSYS)*, Washington, DC, USA, Oct. 2015.
15. D. Lv, **A. Eslami**, and S. Cui, “Load-based Cascading Failure Analysis in Finite Erdős-Rényi Random Networks,” in *Proc. IEEE Global Conference on Signal and Information Processing (GlobalSIP)*, Atlanta, GA, USA, Dec. 2014.
16. **A. Eslami**, C. Huang, J. Zhang, and S. Cui, “An Analytical Approach to Study Cascading Failures in Finite-Size Random Geometric Networks,” in *Proc. IEEE 52nd Annual Allerton Conference on Communication, Control, and Computing*, Monticello, IL, USA, Oct. 2014.
17. A. Banaei, **A. Eslami**, C. Georghiades, and S. Cui, “Joint Random Spectrum Sensing and Access Scheme for Decentralized Cognitive Radio Networks,” in *Proc. IEEE International Conference on Communications (ICC)*, Sydney, Australia, May 2014.
18. H. Mamani, **A. Eslami**, H. Saeedi, and H. Pishro-Nik, “On Generalized EXIT Charts of LDPC Code Ensembles over Binary-Input Output-Symmetric Memoryless Channels,” in *Proc. IEEE International Symposium on Information Theory (ISIT)*, Boston, MA, USA, July 2012.
19. **A. Eslami** and H. Pishro-Nik, “A Practical Approach to Polar Codes,” in *Proc. IEEE International Symposium on Information Theory (ISIT)*, Saint Petersburg, Russia, Aug 2011.
20. **A. Eslami** and H. Pishro-Nik, “On Bit Error Rate Performance of Polar Codes in Finite Regime,” in *proc. 48th Annual Allerton Conference on Communication, Control, and Computing*, Monticello, IL, USA, Sept. 2010.
21. **A. Eslami**, M. Nekoui, and H. Pishro-Nik, “Results on Finite Wireless Networks on A Line,” in *Proc. IEEE Information Theory Workshop (ITW)*, Cairo, Egypt, Jan. 2010.
22. M. Nekoui, **A. Eslami**, and H. Pishro-Nik, “The capacity of Vehicular Ad Hoc Networks with infrastructure,” in *Proc. 6th International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks and Workshops (WiOPT)*, Berlin , Germany, Apr. 2008.
23. M. Nekoui, **A. Eslami**, and H. Pishro-Nik, “Scaling Laws for Distance Limited Communications in Vehicular Ad Hoc Networks,” in *Proc. IEEE International Conference on Communications (ICC)*, Beijing, China, May 2008.
24. **A. Eslami** and B. H. Khalaj, “Capacity of network coding for wireless multicasting,” in *Proc. 8th Annual IEEE Wireless and Microwave (WAMI) Technology Conference*, Clearwater Beach, Florida, USA, Dec. 2006.

25. **A. Eslami** and B. H. Khalaj, "Wireless multicasting using network coding," in *Proc. 1st IEEE International Workshop on Operator-Assisted (Wireless Mesh) Community Networks (OpComm)*, Berlin, Germany, Sept. 2006.

Patents

A. Eslami, A. Asaduzzaman, and M. H. Erjaei, "Internet-Based Remote Control and Monitoring System for Commercial Doors Using Mobile Devices." U.S. Patent 16/013,114, Pending.

Research Group

Ali Behfarnia (Ph.D.)

Mohammad Nadji-Tehrani (Ph.D.)

Stephen O. Kotiang (Ph.D.)

Michael Okwori (Ph.D.)

Mohammad Hossein Erjaei (M.Sc.)

Louis Gomez (B.Sc.)

Sammir Jibril (B.Sc.)

Group Alumni

Phani K. Vuka (M.Sc., 2017)

Chase Weber (B.Sc., 2017)

Cooper Colglazier (B.Sc 2017, now Masters student at Georgia Tech.)

Timothy Rallings (B.Sc., 2017)

Teaching Experience

Wichita State University

Error Control Coding	Fall 2015, Spring 2018
Nano Communications	Spring 2017
Probabilistic Methods in Systems	Fall 2016 & 2017
Signals and Systems	Spring 2016, Fall 2017, Spring 2018

Invited Talks

"Error Correction Meets Cyber-Physical Systems: Resilient Design of Coupled Networks," Information Theory and Applications (ITA) Workshop, University of California San Diego, Feb. 2016.

"How Capacity Was Achieved: From Shannon to Arıkan," Information Initiative at Duke (iiD), Duke University, Durham, NC, Apr. 2015.

"Cascading Failures in Cyber-Physical Systems," California State University at Long Beach, Mar. 2015.

"Modeling and Analysis of Cascading Failures in Cyber-Physical Systems," Information Theory and Applications (ITA) Workshop, University of California San Diego, Feb. 2015.

“Threshold Phenomena in Finite Wireless Networks,” School of Electrical, Computer and Energy Engineering, Arizona State University, Tempe, AZ, Aug. 2013.

“A Practical Approach to Polar Codes,” Broadcom Corporation, San Diego, CA, June 2012.

Computer Skills

Programming Languages: C++, Pascal, Assembly, TCL

Software Packages: MATLAB/Simulink, NS-2, LaTeX, MS Office, MS Visio

Professional Activities

Member of the Institute of Electrical and Electronics Engineers (IEEE), IEEE Communications Society and IEEE Computer Society.

NSF Review Panelist

Frequent Reviewer of Technical Articles:

- IEEE Trans. on Information Theory, IEEE Trans. on Communications, IEEE Communications Letters, IEICE Transactions on Communications, IEEE International Symposium on Information Theory, IEEE International Conference on Communications, IEEE GLOBECOM, IEEE Information Theory Workshop, International Conference on Telecommunications, IEEE SPAWC, Australian Communications Theory Workshop, International Symposium on Turbo Codes & Iterative Information Processing.