

# HANA KHAMFROUSH

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Assistant Professor, Department of Computer Science, University of Kentucky

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## PROFESSIONAL POSITIONS

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<b>Assistant Professor</b>	<i>Jan 2018 - present</i>
University of Kentucky, Department of Computer Science, Lexington, KY, USA	
<b>Research Associate</b>	<i>Jan 2016 - Dec 2017</i>
Penn State University, Department of Computer Science and Engineering, State College, PA, USA	
<b>Postdoctoral Scholar</b>	<i>Jan 2015 - Dec 2015</i>
Penn State University, Department of Computer Science and Engineering, State College, PA, USA	
<b>Researcher</b>	<i>Nov 2009 - Dec 2014</i>
University of Porto, Department of Computer Science and Engineering, Porto, Norte, Portugal	
<b>Visiting Researcher</b>	<i>May 2014 - Aug 2014 &amp; Sep 2013 - Dec 2013</i>
Aalborg University, Department of Electronic Systems, Aalborg, Denmark	

## EDUCATION

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<b>Postdoctoral Scholar</b>	<i>Jan 2015 - Dec 2017</i>
Penn State University, Department of Computer Science and Engineering, State College, PA, USA	
<b>PhD (with honor), Telecommunications Engineering,</b>	<i>2009 - 2014</i>
University of Porto, Department of Electrical Engineering and Computer Science Porto, Portugal	
<b>Master of Science, Telecommunications Engineering,</b>	<i>2006 - 2009</i>
University of Yazd, Department of Electrical Engineering Yazd, Yazd, Iran	
<b>Bachelor of Science, Electrical Engineering,</b>	<i>2001 - 2005</i>
University of Urmia, Department of Electrical Engineering, Urmia, West Azerbaijan, Iran	

## GRANTS & FELLOWSHIPS

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**NSF CISE Research Initiation Initiative (CRII)**, Sole PI, total amount: \$191,000, Awarded March 2020

**NSF SCC-PG: Low cost smart cities: designing affordable smart cities for all communities**, Co-PI, total amount: \$150,000, Awarded Oct 2020

**CS department 50th anniversary** junior faculty fellowship, University of Kentucky, total amount \$15000, 2020

**Cisco Systems, INC.**, PI, \$103,697, Awarded Jan 2020-Jan 2021

**Igniting Research Collaboration (IRC)** research grant, PI, total amount: \$31,522, University of Kentucky, 2019

Travel grant by NSF, CENTRA 4 meeting, 2019  
 Travel grant by NSF, CAREER writing workshop, 2018  
 Travel grant by NSF & IEEE ComSoc, ICDCS conference, 2016  
 Travel grant by ACM, Women in Cyber Security (WiCys) Conference, 2018  
 Travel grant by Oak Ridge Associated Univers., HLF 2016  
 Travel grant by CRA-W, Women in Cyber Security (CyberW), 2017  
 Travel grant by CRA-W, Early & mid-career mentoring, 2016  
 Travel grant by NSF, NeTS Early Career Workshop, Aug 2017  
 Scientific mission grant by European COST, 2014  
 Travel grant by LATTICE, Early career women in engineering, 2017  
 Travel grant, European COST, 2011-2013  
 Short visit travel grant and research collaboration, Army Research Lab, 2015  
 PhD Full Scholarship, Ministry of Science and Technology, Portugal 2009-2014

## HONORS & AWARDS

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Received *Distinguished TPC member award* at INFOCOM 2020  
 Received “*A teacher who made a difference*” award, University of Kentucky, USA, April 2019  
 Featured as “*Women of the week*” by Stories of STEM, 2018  
 Named “*Rising Star in EECS*”, Carnegie Mellon University (CMU), USA, Nov 2016  
 Invited as Young researcher by Heidelberg Laureate Forum, Germany, Sep 2016  
 Named “*Rising Star in EECS*”, Massachusetts Institute of Technology (MIT), USA, Nov 2015  
 Best Poster Award, DTRA annual meeting, Jul 2015 [Diffusion Process in Interdependent networks]

## SELECTED PEER-REVIEWED JOURNAL PAPERS

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N. Hudson, **H. Khamfroush**, “Behavioral information diffusion for opinion maximization in online social networks, accepted to IEEE Transactions on Network Science and Engineering, 2020.  
 N. Bartolini, T. He, V. Arrigoni, A. Massini, F. Trombetti, **H. Khamfroush**, “On Fundamental Bounds on Failure Identifiability by Boolean Network Tomography”, accepted to IEEE Transactions on Networking, Dec 2019.  
 N. Felemban, F. Mehmeti, **H. Khamfroush**, Z. Lu, S. Rallapalli, K.Chan, T. La Porta, “PicSys: Energy-Efficient Fast Image Search on Distributed Mobile Networks”, accepted to IEEE Transactions on Mobile Computing, Dec 2019.  
**H. Khamfroush**, N. Hudson, S. Iloo, M. Rahnamay-Naeini, “Influence spread in two-layer interdependent networks: designed single layer or random two-layer initial spreaders?, accepted to Applied Network Science, May 2019.

- U. Nakarmi, M. Naeini, **H. Khamfroush**, “Critical Component Analysis in Cascading Failures for Power Grids using Community Structures in Interaction Graphs, IEEE Transactions on network science and engineering, March 2019.
- D. Zad Tootaghaj, N. Bartolini, **H. Khamfroush**, T. La Porta, “On progressive network recovery from massive failures under uncertainty, IEEE Transactions on network and service management, Nov. 2018.
- D. Zad Tootaghaj, N. Bartolini, **H. Khamfroush**, T. He, N. R. Chaudhuri, T. La Porta, “Mitigation and recovery from cascading failures in interdependent networks under uncertainty, IEEE Transactions on Control of Network Systems 2018.
- H. Khamfroush**, N. Bartolini, T. La Porta, A. Swami, J. Dillman, “On Propagation of Phenomena in Interdependent Networks, IEEE Transactions on Network Science and Engineering, in press (2016) [Listed as the top 50 most frequently accessed paper].
- P. Pahlevani, **H. Khamfroush**, D. E. Lucani, M. Pederson, F. Fitzek, “Network Coding for Hop-by-Hop Communication Enhancement in Multi-hop Networks, Elsevier COMNET, Vol. 105, Aug. 2016.
- H. Khamfroush**, D. Lucani, P. Pahlevani, J. Barros, “On Optimal Policies for Network Coded Cooperation: Theory and Implementation, IEEE Journal on Selected areas in communication (JSAC), 2015.
- H. Khamfroush**, D. Lucani, J. Barros, P. Pahlevani, “Network-Coded Cooperation Over Time-Varying Channels, IEEE Transactions on communications, 2014.

## SELECTED PEER-REVIEWED CONFERENCE PAPERS

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- X. Zhao, M. Hosseinzadeh, N. Hudson, **H. Khamfroush**, D. Lucani, “Improving Accuracy-Latency Trade-off of Edge-Cloud Computation Offloading for Deep Learning Services, 2020 IEEE GLOBECOM Workshop.
- A. Adeniran, M. Hosseinzadeh, M. A. Hasnat, **H. Khamfroush**, M. Naeini, “Edge Layer Design and Optimization for Smart Grids, IEEE International Conference on Communications, Control, and Computing Technologies for Smart Grids (SmartGridComm) 2020 - Workshop on Edge Computing for Smart Grids.
- N. Hudson, **H. Khamfroush**, B. Harrison, A. Craig, “Smart Advertisement for Maximal Clicks in Online Social Networks Without User Data”, IEEE SMARTCOMP 2020.
- E. C. Hufbaer, N. Hudson, **H. Khamfroush**, “A Proximity-Based Generative Model for Online Social Network Topologies”, ICNC 2020.
- M. Turner, **H. Khamfroush**, “Meeting Users QoS in a Edge-to-Cloud Platform via Optimally Placing Services and Scheduling Tasks”, ICNC 2020 [CNC workshop].
- M. Abul Hasnat, M. Jakir Hossain, A. Adeniran, M. Naeini, **H. Khamfroush**, “Situational awareness using edge-computing enabled Internet-of-Things for smart grids”, IEEE GLOBECOM, Dec 2019 (workshop paper).
- M. Hosseinzadeh, **H. Khamfroush**, “Reliable and Efficient Mobile Edge Computing for Dynamic IoT Systems”, Accepted in the Fourth ACM/IEEE Symposium on Edge Computing PhD Forum, Washington DC, 2019.
- V. Farhadi, F. Mehmeti, T. La Porta, T. He, **H. Khamfroush**, S. Wang, K. Chan, “Service Placement and Request Scheduling for Data-intensive Applications in Edge Clouds,” IEEE INFOCOM 2019.

N. Hudson, M. Turner, A. Nkansah, **H. Khamfroush**, “On the effectiveness of standard centrality metrics for interdependent networks”, ICNC 2019.

M. Turner, **H. Khamfroush**, “QoS-Aware Service Placement and Task Scheduling in a Three-Tiered Edge-to-Cloud System,” Accepted in the Third ACM/IEEE Symposium on Edge Computing PhD Forum, Seattle Oct 2018.

**H. Khamfroush**, S. Lofumbwa Iloo, M. Rahnamay-Naeini, “Vulnerability of Interdependent Infrastructures Under Random Attacks,” ACM SIGMETRIC 2018 [workshop paper].

T. He, **H. Khamfroush**, S. Wang, T. La Porta, S. Stein, “Its Hard to Share: Joint Service Placement and Request Scheduling in Edge Clouds with Sharable and Non-sharable Resources,” IEEE ICDCS 2018, Vienna, Austria.

D. Zad Tootaghaj, N. Bartolini, **H. Khamfroush**, T. La Porta, “Controlling Cascading Failures in Interdependent Networks Under Uncertain Knowledge of Damage”, IEEE International Symposium on Reliable Distributed Systems (IEEE SRDS), 2017.

D. Zad Tootaghaj, **H. Khamfroush**, N. Bartolini, S. Ciavarella, S. Hayes, T. La Porta, “Network Recovery from Massive Failures under Uncertain Knowledge of Damages”, IFIP Networking 2017.

N. Bartolini, T. He, **H. Khamfroush**, “Fundamental Limits of Failure Identifiability by Boolean Network Tomography,” in the 36th Annual IEEE International Conference on Computer Communications (IEEE INFOCOM 2017), Acceptance rate 20%.

S. Ciavarella, N. Bartolini, **H. Khamfroush**, T. La Porta, “Progressive Damage Assessment and Network Recovery after Massive Failures,” in the 36th Annual IEEE International Conference on Computer Communications (IEEE INFOCOM 2017), Acceptance rate 20%.

T. He, N. Bartolini, **H. Khamfroush**, I. Kim, L. Ma, T. La Porta, “Service Placement for Detecting and Localizing Failures Using End-to-End Observations,” in Proceedings of the 36th IEEE International Conference on Distributed Computing Systems (IEEE ICDCS 2016), Acceptance rate 13%.

**H. Khamfroush**, D. E. Lucani, P. Pahlevani, F. Fitzek, J. Barros, “Relay-assisted Network Coding Multicast in the Presence of Neighbors,” in Proceedings of the European Wireless Conference (EW 2015).

**H. Khamfroush**, D. Lucani, J. Barros, “Network coding for wireless cooperative networks: Simple rules, near-optimal delay”, IEEE ICC 2014, Australia.

**H. Khamfroush**, P. Pahlevani, D. Lucani, M. Hundeboll, F. Fitzek, “On the coded packet relay network in the presence of neighbors: Benefits of speaking in a crowded room”, IEEE ICC 2014, Australia.

**H. Khamfroush**, D. Lucani, J. Barros, “Minimizing The Completion Time Of A Wireless Cooperative Network Using Network Coding”, IEEE PIMRC 2013, London.

**H. Khamfroush**, D. Lucani, J. Barros, “GeoCode: A geographic coding-aware communication protocol”, IEEE ITSC 2011, Washington DC.

## RECENT INVITED TALKS

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*Management of complex interdependent networks*, University of Central Florida, Nov. 2019

*Social-Edge CPS: Social-Cyber-Physical Systems Meet Edge Computing*, CENTRA Annual meeting, Jeju Island, South Korea, April 2019

*Design and operation of interdependent critical infrastructure systems*, INFORMS annual meeting, Phoenix, AZ, USA, Nov. 2018

*Phenomena propagation in large scale interdependent networks: design and control*, University of California, Merced, USA, 2017

*Phenomena propagation in large scale interdependent networks: design and control*, University of Kentucky, USA, 2017

*Phenomena propagation in large scale interdependent networks: design and control*, University of Idaho, Idaho Falls, USA, 2017

## **SERVICE TO THE COMMUNITY**

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Co-chair of IEEE SmartGridComm workshop 2020

Member of adhoc committee on Code Plagiarism, Department of Computer Science, University of Kentucky, 2020

Two NSF panels, 2020

Volunteer for the Girls STEM Splash Event in Lexington, Feb 2020

Representative of CS department of University of Kentucky at the engineering open house, Nov 2019

Editorial board of PLOS ONE Journal, August 2018-present

TPC member, IEEE INFOCOM 2020

TPC member, EmeRTeS 2020

TPC member, IEEE 5G World Forum 2019

TPC member, IEEE GLOBECOM 2019

TPC member, IFIP Networking 2018

TPC member, IEEE 5G World Forum 2018

TPC member, IFIP WWIC 2018

TPC member, IEEE GLOBECOM 2018

TPC member, IFIP WONS 2018

TPC member, EWSN 2018

TPC member, IEEE LCN 2017

TPC member, IEEE ICC 2017

TPC member, IEEE GLOBECOM 2017

TPC member, IEEE PIMRC 2016

TPC member, EW 2015

Reviewer, IEEE Trans. on Communications

Reviewer, IEEE Trans. on Information Theory

Reviewer, IEEE Journal on Selected Areas in Communications (JSAC)  
Reviewer, Elsevier COMNET  
Reviewer, IEEE Trans. on Network Science and Engineering  
Reviewer, IEEE Trans. on Mobile Computing  
Reviewer, ICCCN Conference  
Reviewer, IEEE Trans. on Vehicular Technology  
Social media co-chair, IEEE COMSOC N2Women Community, 2016-2018  
Member of broadening participation committee (BPC), Univ. of Kentucky, 2018-2019  
Member of representative team of Univ. of Kentucky at ACM TRI State Women in Computing, 2018  
General Co-Chair of IEEE GLOBECOM 2019 Workshop on “Edge computing for CPS”  
Organizer of BoF session on “Empowering Women of Developing Countries in Computer Science”, TAPIA Conference, Sep 2016  
Honored guest to represent local, successful women in STEM at Yahng Discovery Center (YDC) at Berea College, March 2019  
Member of Award Committee, Summer research program, Department of Computer Science, University of Kentucky, Summer 2019  
Reviewer for Elsevier book proposal, April 2019  
Committee member, Media and outreach committee, Aug 2019-present  
Judge for the engineering category of the Oswald Research Creativity Competition at the University of Kentucky, Fall 2019  
Judge for the 3rd Annual Commonwealth Computational Summit (CCS), University of Kentucky, Fall 2019

## **PROFESSIONAL ORGANIZATION MEMBERSHIP**

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Senior IEEE Member  
ACM member  
INFORMS member