

# EGEMEN K. ÇETİNKAYA

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- EDUCATION**
- The University of Kansas, Lawrence, KS**  
**Ph.D. in Electrical Engineering** **Dec. 2013**  
*Dissertation:* Modelling and Design of Resilient Networks under Challenges  
Advisor: James P.G. Sterbenz  
Committee: Georg Carle, Tyrone E. Duncan, Victor S. Frost, Bo Luo, Deep Medhi, and Gary J. Minden
- University of Missouri-Rolla, Rolla, MO**  
**M.Sc. in Electrical Engineering** **Aug. 2001**  
*Thesis:* Reliability Analysis of SCADA Systems Used in Oil and Gas Industry  
Advisor: Kelvin T. Erickson  
Committee: E. Keith Stanek and Shari Dunn-Norman
- Uludağ University, Bursa, Turkey**  
**B.Sc. in Electronics Engineering** **Jun. 1999**

**RESEARCH &  
TEACHING  
INTERESTS**

- Design and analysis of resilient and dependable networks
- Development and simulation of network architectures and protocols
- Graph-theoretic approaches for modelling complex networks
- Wireless and mobile networks
- Network security
- Future Internet architectures and Software-Defined Networks (SDN)
- Game-theoretic approaches in networks

**CAREER  
HIGHLIGHTS**

- Gained expertise over 17 years in communication networks and systems in academia and the industry
- Conducted research in communication networks and systems funded by the National Science Foundation (NSF), the US Department of Defense (DoD), the US Department of Interior (DoI), the EU Seventh Framework Programme (FP7), the Battelle Institute, and Sprint
- Collaborated on networking research with the national and international institutions in the field of resilient and survivable networks, DTN (delay tolerant networks), Future Internet architectures and testbeds
- Published over 50 publications in the design and analysis of resilient communication and control systems resulting in 1500 citations with an *h*-index of 18 and *i10*-index of 31 according to Google Scholar
- Reviewed over 60 papers for scientific journals, conferences, and workshops
- Contributed to the open software ns-3 network simulator that is being used by the network research and education community
- Improved call completions 40% in an international wireless cellular telephony network positively affecting 10+ million customers

## RESEARCH EXPERIENCE

Missouri University of Science and Technology, Rolla, MO

Assistant Professor

Jan. 2014 – Present

- Director of the *Complex Networks and Systems (CoNetS)* research group and associate investigator of the Intelligent Systems Center investigating resilient and dependable networks and systems in the following research areas:
  1. Network Robustness
    - Investigated graph-theoretic properties of critical infrastructure interdependencies
    - Modeled and analyzed global petroleum exchange as a weighted interdependent network
  2. Future Internet Architectures and Software-Defined Networks
    - Experimented DDoS attack and defense mechanisms on the GENI experimental testbed
  3. Network Protocol Development and Modeling
    - Secure cloud protocol development and experimentation on the GENI experimental testbed

The University of Kansas, Lawrence, KS

Graduate Research Assistant

Aug. 2008 – Dec. 2013

- Conducted research in the ResiliNets group under the supervision of Professor James P.G. Sterbenz in the Information and Telecommunication Technology Center (ITTC) for the following six projects:
  1. Resilient Network Design for Massive Failures and Attacks
    - Developed a taxonomy of network challenges including: attacks, large-scale disasters, dependent failures, socio-political and economical challenges, disconnected operations in mobile and wireless environment
  2. Interdomain Resilience
    - Analyzed flow robustness of single and multilevel graphs
    - Investigated correlation of communication and transportation networks using graph spectra
  3. Great Plains Environment for Network Innovation (GpENI)
    - Managed and administered the Future Internet experimental testbed
    - Conducted resilience experiments on the GpENI testbed
  4. Postmodern Internetwork Architecture (PoMo)
    - Designed challenge module to simulate random failures, targeted attacks, and large-scale correlated failures in the ns-3 network simulator
  5. Highly-Dynamic Airborne Ad Hoc Networking (ANTP)
    - Developed highly-mobile aeronautical communication protocol suite
    - Modelled non-IP routing protocol in the ns-3 network simulator
    - Implemented and prototyped the ANTP protocol suite using the Nokia N810 smartphones programmed with Python
  6. Resilience and Survivability for Future Networking (ResumeNet)
    - Identified resilience disciplines and their interrelationship
- Assisted in grant proposal preparations by: writing technical sections on specific topics, preparing figures, finding bibliographic references, and proofreading

**University of Missouri-Rolla, Rolla, MO**

**Graduate Research Assistant**

**Jan. 2000 – Dec. 2000**

- Analyzed reliability of the SCADA (Supervisory Control And Data Acquisition) system in offshore oil and gas platforms, a project funded by US DoI
- Developed a C program to calculate availability of a fault tree

**TEACHING  
EXPERIENCE**

**Missouri University of Science and Technology, Rolla, MO**

**Assistant Professor**

**Jan. 2014 – Present**

- Developed content and curriculum for graduate-level and upper-level undergraduate networking courses in the Computer Engineering Department (CPE)
- MST-CPE 6510 Resilient Networks
  - Co-listed with Systems Engineering 6322
  - Involved distance education component using WebEx
  - Spring 2017: 6 students, evaluation score: 4.00/4.00
  - Spring 2016: 13 students, evaluation score: 3.08/4.00
  - Spring 2015: 11 students, evaluation score: 3.20/4.00
  - Spring 2014: 3 students, evaluation score: 2.50/4.00
- MST-CPE 5420 Introduction to Network Security
  - Involved distance education component using WebEx
  - Fall 2016: 15 students, evaluation score: 3.73/4.00
  - Fall 2015: 16 students, evaluation score: 3.00/4.00
  - Fall 2014: 15 students, evaluation score: 3.67/4.00
- MST-CPE 2210 Introduction to Digital Logic
  - Sophomore-level undergraduate course
  - Spring 2018: 70 students, evaluation score: x.yy/4.00
  - Fall 2016: 43 students, evaluation score: 2.84/4.00
  - Fall 2015: 44 students, evaluation score: 2.92/4.00

**The University of Kansas, Lawrence, KS**

**Graduate Teaching Assistant**

**Aug. 2008 – Dec. 2011**

- Assisted in content development of graduate-level networking courses in the Electrical Engineering and Computer Science Department (EECS)
- Presented laboratory and lecture materials
- Developed ns-3 simulation labs and set up lab environment
- Graded homework, exams, and project reports
- KU-EECS 780 Communication Networks
  - Spring 2011: 14 students, evaluation score: 4.48/5.00
  - Spring 2010: 16 students, evaluation score: 4.50/5.00
  - Spring 2009: 11 students, evaluation score: 4.40/5.00
- KU-EECS 882 Mobile Wireless Networking
  - Fall 2011: 17 students, evaluation score: 4.25/5.00
  - Fall 2009: 10 students, evaluation score: 4.56/5.00
- Grader for KU-EECS 712 Network Security
  - Fall 2008: 17 students

## INDUSTRY EXPERIENCE

**Sprint-Nextel, Lenexa, KS**  
**Telecom Design Engineer II** **Dec. 2005 – Aug. 2008**

- Analyzed new product requirements and managed vendors for Radio Access Network (RAN) systems within Network Development organization
- Tested 3G air interface systems, smart antennas, and femtocells

**Sprint, Lenexa, KS**  
**Network Systems Engineer III** **May 2004 – Dec. 2005**

- Executed integration tests on the software and hardware for switch and radio systems within Sprint Technology Integration Center (STIC)

**Sprint, Overland Park, KS**  
**NTAC Engineer II** **Feb. 2003 – May 2004**

- Identified, troubleshot, and resolved network problems for radio access networks

**Sprint PCS, Lenexa, KS**  
**NTAC Engineer I** **Oct. 2001 – Feb. 2003**

- Provided *highest tier* technical support in National Technical Assistance Center (NTAC) for Mobile Switching Centers (MSCs) and Radio Access Network (RAN) in wireless CDMA network

**ENKO Industrial Control Systems Corp., İzmir, Turkey**  
**Intern** **Summer 1997, 1998**

- Designed a square wave generator using Microchip PIC 16C5X microcontroller

## HONORS & AWARDS

- *Second Place Undergraduate Student Paper Award* for the paper titled “Graph Theoretic Modeling and Energy Analysis of Wireless Telemetry Networks” in 53rd International Telemetry Conference, Las Vegas, NV, October 2017
- *Best Student Paper Award* for the paper titled “Towards Cloud Security Improvement with Encryption Intensity Selection” in IEEE/IFIP International Conference on the Design of Reliable Communication Networks (DRCN), Munich, March 2017
- *Class of 1942 Alumni Outstanding Teaching Award*, Missouri University of Science and Technology, Rolla, MO, October 2015
- *Senior Member, IEEE*, elevated in 2014
- *Best Paper Award* for the paper titled “Modelling Attacks and Challenges to Wireless Networks” in IEEE/IFIP International Workshop on Reliable Networks Design and Modeling (RNDM), St. Petersburg, October 2012
- *Travel Grant* from US NSF to attend ACM MobiCom 2012 in İstanbul (\$500)
- *Best Poster Award* for the poster titled “Resilience of Backbone Provider Networks” in Great Plains Network Annual Meeting Student Poster Competition, Kansas City, MO, June 2012
- *Third Place Award* for the presentation titled “Modelling and Design of the Resilient and Survivable Future Internet under Challenges” in KU Graduate Engineering Association (GEA) Student Presentation Competition, Lawrence, KS, April 2012
- *Honorable Mention Award* for the poster titled “Resilience of Backbone Provider Networks” in KU Graduate Engineering Association (GEA) Student Poster Competition, Lawrence, KS, April 2012

- *Fellowship* from International Foundation for Telemetry – awarded three times in total amount of \$3,000
- *Travel Grant* from US NSF to attend GENI Engineering Conference (GEC) – GEC 5 – GEC 12, GEC 17, GEC 20, GEC 23
- *Sprint Excellence Award* – awarded six times for outstanding accomplishments
- *Honorable Mention Award* for the paper titled “SCADA System Trends in Deep-water Developments” in Rio Oil and Gas Expo and Conference, Rio de Janeiro, October 2000

## PUBLICATIONS *Journal and Magazine Articles*

11. **Egemen K. Çetinkaya**, “A Brief Review of Security in Emerging Programmable Computer Networking Technologies,” *IEEE-HKN Bridge Magazine*, Volume 112, Issue 2, pp. 27 – 34, May 2016.
10. **Egemen K. Çetinkaya**, Mohammed J.F. Alenazi, Andrew M. Peck, Justin P. Rohrer, and James P.G. Sterbenz, “Multilevel Resilience Analysis of Transportation and Communication Networks,” *Telecommunication Systems*, Volume 60, Issue 4, pp. 515 – 537, December 2015.
9. Jacek Rak, Mario Pickavet, Kishor S. Trivedi, Javier Alonso Lopez, Arie M.C.A. Koster, James P.G. Sterbenz, **Egemen K. Çetinkaya**, Teresa Gomes, Matthias Gunkel, Krzysztof Walkowiak, and Dimitri Staessens, “Future Research Directions in Design of Reliable Communication Systems (**Invited Panel Paper**),” *Telecommunication Systems*, Volume 60, Issue 4, pp. 423 – 450, December 2015.
8. **Egemen K. Çetinkaya**, Mohammed J.F. Alenazi, Yufei Cheng, Andrew M. Peck, and James P.G. Sterbenz, “A Comparative Analysis of Geometric Graph Models for Modelling Backbone Networks,” *Optical Switching and Networking*, Volume 14, Part 2, pp. 95 – 106, August 2014.
7. Mohammed J.F. Alenazi, **Egemen K. Çetinkaya**, and James P.G. Sterbenz, “Cost-Efficient Algebraic Connectivity Optimisation of Backbone Networks,” *Optical Switching and Networking*, Volume 14, Part 2, pp. 107 – 116, August 2014.
6. James P.G. Sterbenz, David Hutchison, **Egemen K. Çetinkaya**, Abdul Jabbar, Justin P. Rohrer, Marcus Schöller, and Paul Smith, “Redundancy, Diversity, and Connectivity to Achieve Multilevel Network Resilience, Survivability, and Disruption Tolerance (**Invited Paper**),” *Telecommunication Systems*, Volume 56, Issue 1, pp. 17 – 31, May 2014.
5. Deep Medhi, Byrav Ramamurthy, Caterina Scoglio, Justin P. Rohrer, **Egemen K. Çetinkaya**, Ramkumar Cherukuri, Xuan Liu, Pragatheeswaran Angu, Andy Bavier, Cort Buffington, and James P.G. Sterbenz, “The GpENI Testbed: Network Infrastructure, Implementation Experience, and Experimentation,” *Computer Networks*, Volume 61, pp. 51 – 74, March 2014 (Special issue on Future Internet Testbeds – Part I).
4. **Egemen K. Çetinkaya**, Dan Broyles, Amit Dandekar, Sripriya Srinivasan, and James P.G. Sterbenz, “Modelling Communication Network Challenges for Future Internet Resilience, Survivability, and Disruption Tolerance: A Simulation-Based Approach,” *Telecommunication Systems*, Volume 52, Issue 2, pp. 751 – 766, February 2013.

3. James P.G. Sterbenz, **Egemen K. Çetinkaya**, Mahmood A. Hameed, Abdul Jabbar, Shi Qian, and Justin P. Rohrer, “Evaluation of Network Resilience, Survivability, and Disruption Tolerance: Analysis, Topology Generation, Simulation, and Experimentation (**Invited Paper**),” *Telecommunication Systems*, Volume 52, Issue 2, pp. 705 – 736, February 2013.
2. Justin P. Rohrer, Abdul Jabbar, **Egemen K. Çetinkaya**, Erik Perrins, and James P.G. Sterbenz, “Highly-Dynamic Cross-Layered Aeronautical Network Architecture,” *IEEE Transactions on Aerospace and Electronic Systems*, Volume 47, Issue 4, pp. 2742 – 2765, October 2011.
1. James P.G. Sterbenz, David Hutchison, **Egemen K. Çetinkaya**, Abdul Jabbar, Justin P. Rohrer, Marcus Schöller, and Paul Smith, “Resilience and Survivability in Communication Networks: Strategies, Principles, and Survey of Disciplines,” *Computer Networks*, Volume 54, Issue 8, pp. 1245 – 1265, June 2010.

*Book Chapters*

2. James P.G. Sterbenz, Justin P. Rohrer, Mohammed J.F. Alenazi, Truc Anh N. Nguyen, **Egemen K. Çetinkaya**, Hemanth Narra, Kamakshi S. Pathapati, and Kevin Peters, “Disruption-Tolerant Airborne Networks and Protocols,” in *UAV Networks and Communications*, Kamesh Namuduri, Serge Chaumette, Jae H. Kim, and James P.G. Sterbenz (Eds.), Cambridge University Press, 2018, pp. 58 – 95.
1. Kelvin T. Erickson, E. Keith Stanek, **Egemen K. Çetinkaya**, Shari Dunn-Norman, and Ann Miller, “Reliability of SCADA Systems in Offshore Oil and Gas Platforms,” in *Stability and Control of Dynamical Systems with Applications: A Tribute to Anthony N. Michel*, Derong Liu and Panos J. Antsaklis (Eds.), Boston: Birkhäuser, 2003, pp. 395 – 404.

*Conference and Workshop Proceedings (peer-reviewed)*

30. Richard E. Snyder, Tristan A. Shatto, and **Egemen K. Çetinkaya**, “Empirical Evaluation of Network Optimization via Graph Spectra and Energy,” in *Proceedings of the 9th IEEE/IFIP International Workshop on Reliable Networks Design and Modeling (RNDM)*, Sardinia, September 2017, pp. 1 – 7.
29. Tristan A. Shatto and **Egemen K. Çetinkaya**, “Variations in Graph Energy: A Measure for Network Resilience,” in *Proceedings of the 9th IEEE/IFIP International Workshop on Reliable Networks Design and Modeling (RNDM)*, Sardinia, September 2017, pp. 1 – 7.
28. Ian H. Pittwood and **Egemen K. Çetinkaya**, “Modeling Link Weights in Backbone Networks,” in *Proceedings of the 9th IEEE/IFIP International Workshop on Reliable Networks Design and Modeling (RNDM)*, Sardinia, September 2017, pp. 1 – 4.
27. Mortada A. Aman and **Egemen K. Çetinkaya**, “Towards Cloud Security Improvement with Encryption Intensity Selection,” in *Proceedings of the 13th IEEE/IFIP International Conference on the Design of Reliable Communication Networks (DRCN)*, Munich, March 2017, pp. 55 – 61.  
(**Best Student Paper Award**)
26. Tristan A. Shatto and **Egemen K. Çetinkaya**, “Spectral Analysis of Backbone Networks Against Targeted Attacks,” in *Proceedings of the 13th IEEE/IFIP International Conference on the Design of Reliable Communication Networks (DRCN)*, Munich, March 2017, pp. 70 – 77.

25. Andreas Mauthe, David Hutchison, **Egemen K. Çetinkaya**, Ivan Ganchev, Jacek Rak, James P.G. Sterbenz, Matthias Gunkel, Paul Smith, and Teresa Gomes, “Disaster-Resilient Communication Networks: Principles and Best Practices,” in *Proceedings of the 8th IEEE/IFIP International Workshop on Reliable Networks Design and Modeling (RNDM)*, Halmstad, September 2016, pp. 1 – 10.
24. Anuja S. Bhave, Mariesa L. Crow, and **Egemen K. Çetinkaya**, “Robustness of Power Grid Topologies Against Centrality-Based Attacks,” in *Proceedings of the Resilience Week Symposia (RWS)*, Chicago, IL, August 2016, pp. 115 – 118.
23. Rajgopal Yarlagadda, Srinath Pinnaka, and **Egemen K. Çetinkaya**, “A Time-Evolving Weighted-Graph Analysis of Global Petroleum Exchange,” in *Proceedings of the 3rd International Workshop on Understanding the interplay between Sustainability, Resilience, and Robustness in networks (USR)*, Munich, October 2015, pp. 266 – 273.
22. Srinath Pinnaka, Rajgopal Yarlagadda, and **Egemen K. Çetinkaya**, “Modelling Robustness of Critical Infrastructure Networks,” in *Proceedings of the 11th IEEE/IFIP International Conference on the Design of Reliable Communication Networks (DRCN)*, Kansas City, MO, March 2015, pp. 95 – 98.
21. Mohammed J.F. Alenazi, **Egemen K. Çetinkaya**, and James P.G. Sterbenz, “Cost-Constrained and Centrality-Balanced Network Design Improvement,” in *Proceedings of the 6th IEEE/IFIP International Workshop on Reliable Networks Design and Modeling (RNDM)*, Barcelona, November 2014, pp. 194 – 201.
20. Mohammed J.F. Alenazi, **Egemen K. Çetinkaya**, and James P.G. Sterbenz, “Cost-Efficient Network Improvement to Achieve Maximum Path Diversity,” in *Proceedings of the 6th IEEE/IFIP International Workshop on Reliable Networks Design and Modeling (RNDM)*, Barcelona, November 2014, pp. 202 – 208.
19. **Egemen K. Çetinkaya**, Mohammed J.F. Alenazi, Yufei Cheng, Andrew M. Peck, and James P.G. Sterbenz, “On the Fitness of Geographic Graph Generators for Modelling Physical Level Topologies,” in *Proceedings of the 5th IEEE/IFIP International Workshop on Reliable Networks Design and Modeling (RNDM)*, Almaty, September 2013, pp. 38 – 45.
18. Mohammed J.F. Alenazi, **Egemen K. Çetinkaya**, and James P.G. Sterbenz, “Network Design and Optimisation Based on Cost and Algebraic Connectivity,” in *Proceedings of the 5th IEEE/IFIP International Workshop on Reliable Networks Design and Modeling (RNDM)*, Almaty, September 2013, pp. 193 – 200.
17. Dongsheng Zhang, **Egemen K. Çetinkaya**, and James P.G. Sterbenz, “Robustness of Mobile Ad Hoc Networks Under Centrality-Based Attacks,” in *Proceedings of the 5th IEEE/IFIP International Workshop on Reliable Networks Design and Modeling (RNDM)*, Almaty, September 2013, pp. 229 – 235.
16. **Egemen K. Çetinkaya**, Andrew M. Peck, and James P.G. Sterbenz, “Flow Robustness of Multilevel Networks,” in *Proceedings of the 9th IEEE/IFIP International Conference on the Design of Reliable Communication Networks (DRCN)*, Budapest, March 2013, pp. 274 – 281.
15. **Egemen K. Çetinkaya** and James P.G. Sterbenz, “A Taxonomy of Network Challenges,” in *Proceedings of the 9th IEEE/IFIP International Conference on the Design of Reliable Communication Networks (DRCN)*, Budapest, March 2013, pp. 322 – 330.

14. Yufei Cheng, **Egemen K. Çetinkaya**, and James P.G. Sterbenz, “Transactional Traffic Generator Implementation in ns-3,” in *Proceedings of the ICST SIMUTools Workshop on ns-3 (WNS3)*, Cannes, March 2013, pp. 182 – 189.
13. **Egemen K. Çetinkaya**, Mohammed J.F. Alenazi, Justin P. Rohrer, and James P.G. Sterbenz, “Topology Connectivity Analysis of Internet Infrastructure Using Graph Spectra,” in *Proceedings of the 4th IEEE/IFIP International Workshop on Reliable Networks Design and Modeling (RNDM)*, St. Petersburg, October 2012, pp. 752 – 758.
12. Dongsheng Zhang, Santosh Ajith Gogi, Dan Broyles, **Egemen K. Çetinkaya**, and James P.G. Sterbenz, “Modelling Attacks and Challenges to Wireless Networks,” in *Proceedings of the 4th IEEE/IFIP International Workshop on Reliable Networks Design and Modeling (RNDM)*, St. Petersburg, October 2012, pp. 806 – 812.  
(Best Paper Award)
11. Hemanth Narra, **Egemen K. Çetinkaya**, and James P.G. Sterbenz, “Performance Analysis of AeroRP with Ground Station Advertisements,” in *Proceedings of the ACM MobiHoc Workshop on Airborne Networks and Communications (Airborne)*, Hilton Head Island, SC, June 2012, pp. 43 – 47.
10. Yufei Cheng, **Egemen K. Çetinkaya**, and James P.G. Sterbenz, “Dynamic Source Routing (DSR) Protocol Implementation in ns-3,” in *Proceedings of the ICST SIMUTools Workshop on ns-3 (WNS3)*, Sirmione, Italy, March 2012, pp. 367 – 374.
9. Justin P. Rohrer, **Egemen K. Çetinkaya**, Hemanth Narra, Dan Broyles, Kevin Peters, and James P.G. Sterbenz, “AeroRP Performance in Highly-Dynamic Airborne Networks Using 3D Gauss-Markov Mobility Model,” in *Proceedings of the IEEE Military Communications Conference (MILCOM)*, Baltimore, MD, November 2011, pp. 834 – 841.
8. Justin P. Rohrer, **Egemen K. Çetinkaya**, and James P.G. Sterbenz, “Progress and Challenges in Large-Scale Future Internet Experimentation using the GpENI Programmable Testbed,” in *Proceedings of the 6th ACM International Conference on Future Internet Technologies (CFI)*, Seoul, June 2011, pp. 46 – 49.
7. Kevin Peters, Abdul Jabbar, **Egemen K. Çetinkaya**, and James P.G. Sterbenz, “A Geographical Routing Protocol for Highly-Dynamic Aeronautical Networks,” in *Proceedings of the IEEE Wireless Communications and Networking Conference (WCNC)*, Cancun, March 2011, pp. 492 – 497.
6. Hemanth Narra, Yufei Cheng, **Egemen K. Çetinkaya**, Justin P. Rohrer, and James P.G. Sterbenz, “Destination-Sequenced Distance Vector (DSDV) Routing Protocol Implementation in ns-3,” in *Proceedings of the ICST SIMUTools Workshop on ns-3 (WNS3)*, Barcelona, March 2011, pp. 439 – 446.
5. James P.G. Sterbenz, **Egemen K. Çetinkaya**, Mahmood A. Hameed, Abdul Jabbar, and Justin P. Rohrer, “Modelling and Analysis of Network Resilience,” in *Proceedings of the 3rd IEEE International Conference on Communication Systems and Networks (COMSNETS)*, Bangalore, January 2011, pp. 1 – 10.  
(Invited Paper)
4. Mahmood A. Hameed, Abdul Jabbar, **Egemen K. Çetinkaya**, and James P.G. Sterbenz, “Deriving Network Topologies from Real World Constraints,” in *Proceedings of the IEEE GLOBECOM Workshop on Complex and Communication Networks (CCNet)*, Miami, FL, December 2010, pp. 400 – 404.



3. Justin P. Rohrer, Abdul Jabbar, **Egemen K. Çetinkaya**, and James P.G. Sterbenz, “Airborne Telemetry Networks: Challenges and Solutions in the ANTP Suite,” in *Proceedings of the IEEE Military Communications Conference (MILCOM)*, San Jose, CA, November 2010, pp. 74 – 79.
2. **Egemen K. Çetinkaya**, Dan Broyles, Amit Dandekar, Sripriya Srinivasan, and James P.G. Sterbenz, “A Comprehensive Framework to Simulate Network Attacks and Challenges,” in *Proceedings of the 2nd IEEE/IFIP International Workshop on Reliable Networks Design and Modeling (RNDM)*, Moscow, October 2010, pp. 538 – 544.
1. Abdul Jabbar, Justin P. Rohrer, Andrew Oberthaler, **Egemen K. Çetinkaya**, Victor S. Frost, and James P.G. Sterbenz, “Performance Comparison of Weather Disruption-Tolerant Cross-Layer Routing Algorithms,” in *Proceedings of the 28th IEEE International Conference on Computer Communications (INFOCOM)*, Rio de Janeiro, April 2009, pp. 1143 – 1151.

*Conference and Workshop Proceedings (non-peer-reviewed / abstract-reviewed)*

10. Tristan A. Shatto, Kurt L. Kosbar, and **Egemen K. Çetinkaya**, “Graph Theoretic Modeling and Energy Analysis of Wireless Telemetry Networks,” in *Proceedings of the 53rd International Telemetry Conference (ITC)*, Las Vegas, NV, October 2017.  
(**Second Place Undergraduate Student Paper Award**)
9. Mohammed J.F. Alenazi, Santosh Ajith Gogi, Dongsheng Zhang, **Egemen K. Çetinkaya**, Justin P. Rohrer, and James P.G. Sterbenz, “Implementation of Aeronautical Network Protocols,” in *Proceedings of the AIAA Infotech@Aerospace Conference*, Boston, MA, August 2013.
8. Mohammed J.F. Alenazi, **Egemen K. Çetinkaya**, Justin P. Rohrer, and James P.G. Sterbenz, “Implementation of the AeroRP and AeroNP Protocols in Python,” in *Proceedings of the 48th International Telemetry Conference (ITC)*, San Diego, CA, October 2012.
7. Santosh Ajith Gogi, Dongsheng Zhang, **Egemen K. Çetinkaya**, Justin P. Rohrer, and James P.G. Sterbenz, “Implementation of the AeroTP Transport Protocol in Python,” in *Proceedings of the 48th International Telemetry Conference (ITC)*, San Diego, CA, October 2012.
6. Mohammed Alenazi, Santosh Ajith Gogi, Dongsheng Zhang, **Egemen K. Çetinkaya**, Justin P. Rohrer, and James P.G. Sterbenz, “ANTP Protocol Suite Software Implementation Architecture in Python,” in *Proceedings of the 47th International Telemetry Conference (ITC)*, Las Vegas, NV, October 2011.
5. Yufei Cheng, **Egemen K. Çetinkaya**, and James P.G. Sterbenz, “Performance Comparison of Routing Protocols for Transactional Traffic over Aeronautical Networks,” in *Proceedings of the 47th International Telemetry Conference (ITC)*, Las Vegas, NV, October 2011.
4. Hemanth Narra, **Egemen K. Çetinkaya**, and James P.G. Sterbenz, “Performance Analysis of AeroRP with Ground Station Updates in Highly-Dynamic Airborne Telemetry Networks,” in *Proceedings of the 47th International Telemetry Conference (ITC)*, Las Vegas, NV, October 2011.
3. Kevin Peters, **Egemen K. Çetinkaya**, Abdul Jabbar, and James P.G. Sterbenz, “Analysis of a Geolocation-Assisted Routing Protocol for Airborne Telemetry Networks,” in *Proceedings of the 46th International Telemetry Conference (ITC)*, San Diego, CA, October 2010.

2. **Egemen K. Çetinkaya** and James P.G. Sterbenz, “Aeronautical Gateways: Supporting TCP/IP-based Devices and Applications over Modern Telemetry Networks,” in *Proceedings of the 45th International Telemetry Conference (ITC)*, Las Vegas, NV, October 2009.
1. Shari Dunn-Norman, Kelvin T. Erickson, **Egemen K. Çetinkaya**, E. Keith Stanek, and Ann Miller, “SCADA System Trends in Deepwater Developments,” in *Rio Oil and Gas Expo and Conference*, Rio de Janeiro, October 2000. (**Honorable Mention Award**)

#### *Technical Reports*

2. James P.G. Sterbenz, Justin P. Rohrer, and **Egemen K. Çetinkaya**, “Multi-layer Network Resilience Analysis and Experimentation on GENI,” The University of Kansas, Lawrence, KS, Technical Report ITTC-FY2011-TR-61349-01, July 2010.
1. Abdul Jabbar, Qian Shi, **Egemen K. Çetinkaya**, and James P.G. Sterbenz, “KU-LocGen: Location and Cost-Constrained Network Topology Generator,” The University of Kansas, Lawrence, KS, Technical Report ITTC-FY2009-TR-45030-01, December 2008.

#### *Extended Abstracts*

7. **Egemen K. Çetinkaya** and Tristan A. Shatto, “Eigenvalues for Resilience Analysis of Backbone Networks,” in *Proceedings of the SIAM Workshop on Network Science (NS)*, Pittsburgh, PA, July 2017.
6. Mortada A. Aman and **Egemen K. Çetinkaya**, “DSB-SEIS: A Deduplicating Secure Backup System with Encryption Intensity Selection,” in *Proceedings of the 4th ACM PODC Workshop on Distributed Cloud Computing (DCC)*, Chicago, IL, July 2016.
5. Srinath Pinnaka, Rajgopal Yarlagadda, and **Egemen K. Çetinkaya**, “Evolution of Global Crude Oil Dependence: A Weighted-Directed Graph Analysis,” in *Proceedings of the 2nd National Symposium on Resilient Critical Infrastructure*, Philadelphia, PA, August 2015.
4. **Egemen K. Çetinkaya**, Justin P. Rohrer, Abdul Jabbar, Mohammed J.F. Alenazi, Dongsheng Zhang, Dan S. Broyles, Kamakshi Pathapati, Hemanth Narra, Kevin Peters, Santosh Gogi, and James P.G. Sterbenz, “Protocols for Highly-Dynamic Airborne Networks,” in *Proceedings of the ACM MobiCom*, İstanbul, August 2012, pp. 411 – 413.
3. Dongsheng Zhang, Santosh Ajith Gogi, Dan S. Broyles, **Egemen K. Çetinkaya**, and James P.G. Sterbenz, “Modelling Wireless Challenges,” in *Proceedings of the ACM MobiCom*, İstanbul, August 2012, pp. 423 – 425.
2. **Egemen K. Çetinkaya**, Justin P. Rohrer, and James P.G. Sterbenz, “Resilience of Backbone Provider Networks,” in *IEEE INFOCOM Student Workshop*, Orlando, FL, March 2012.
1. Justin P. Rohrer, **Egemen K. Çetinkaya**, and James P.G. Sterbenz, “Resilience Experiments in the GpENI Programmable Future Internet Testbed,” in *Proceedings of the 11th Würzburg Workshop on IP: Joint ITG and Euro-NF Workshop (EuroView)*, Würzburg, August 2011, pp. 29 – 30.

## PRESENTATIONS *Invited Talks*

- “Improving the Resilience of Complex Networks and Systems,” *IEEE Rolla Subsection*, Rolla, MO, October 2017.
- “Network and System Resilience: A Network Science Approach,” *Computer Science Department, Missouri S&T University*, Rolla, MO, September 2015.
- “Network Security Experimentation on the GENI Testbed,” in *Cloud Security Curriculum Development Workshop (CSCW)*, Chapel Hill, NC, July 2015.
- “Network Resilience Modelling: A Graph-Theoretic Approach,” *Computer Science Department, Missouri S&T University*, Rolla, MO, January 2015.
- “Critical Infrastructure Modelling,” in *Sixth Central Area Networking and Security Workshop (CANSec)*, Lawrence, KS, October 2014.
- “Security of SDN-Enabled Smart Cities,” in *US-Korea (NSF-IITP Sponsored) Workshop on SDN/NFV for Smart Cities*, Chicago, IL, August 2014.
- “Networks to Ethics: Utilizing Technology for Gaining Knowledge,” *Applied Language Institute, Missouri S&T University*, Rolla, MO, March 2014.
- “Modeling and Design of the Resilient and Survivable Future Internet under Challenges,” *Electrical and Computer Engineering Department, Missouri S&T University*, Rolla, MO, March 2013.

## *Posters*

- Dixit Verma and **Egemen K. Çetinkaya**, “Controller Area Network (CAN) Vulnerability Analysis,” in *11th Central Area Networking and Security Workshop (CANSec)*, Rolla, MO, October 2017.
- Vivekathreya Krishnan and **Egemen K. Çetinkaya**, “Centralized Edge Computing and Its Efficiency,” in *11th Central Area Networking and Security Workshop (CANSec)*, Rolla, MO, October 2017.
- Richard E. Snyder and **Egemen K. Çetinkaya**, “Monitoring and Detection of Network Anomalies,” in *11th Central Area Networking and Security Workshop (CANSec)*, Rolla, MO, October 2017.
- **Egemen K. Çetinkaya** and Tristan A. Shatto, “Eigenvalues for Resilience Analysis of Backbone Networks,” in *SIAM Workshop on Network Science*, Pittsburgh, PA, July 2017.
- Mortada A. Aman and **Egemen K. Çetinkaya**, “A Secure Backup System with Encryption Intensity Selection and Deduplication,” in *10th Central Area Networking and Security Workshop (CANSec)*, St. Louis, MO, October 2016.
- Srinath Pinnaka, Rajgopal Yarlaga, and **Egemen K. Çetinkaya**, “Modelling Robustness of Critical Infrastructure Networks,” in *Resilience Week*, Philadelphia, PA, August 2015.
- Mani Chaitanya Gorla, Venu Madhav Kamaraju, and **Egemen K. Çetinkaya**, “Network Attack Experimentation using OpenFlow-enabled GENI Testbed,” in *23rd GENI Engineering Conference*, Champaign, IL, June 2015.
- Mohammed J.F. Alenazi, **Egemen K. Çetinkaya**, and James P.G. Sterbenz, “Network Resilience Improvement Using Link Additions,” in *Great Plains Network (GPN) Annual Meeting*, Kansas City, MO, May 2014.
- **Egemen K. Çetinkaya**, Justin P. Rohrer, Abdul Jabbar, Mohammed J.F. Alenazi, Dongsheng Zhang, Dan S. Broyles, Kamakshi Pathapati, Hemanth Narra, Kevin Peters, Santosh Gogi, and James P.G. Sterbenz, “Protocols for Highly-Dynamic Airborne Networks,” in *ACM MobiCom*, Istanbul, August 2012.

- Dongsheng Zhang, Santosh Ajith Gogi, Dan S. Broyles, **Egemen K. Çetinkaya**, and James P.G. Sterbenz, “Modelling Wireless Challenges,” in *ACM MobiCom*, İstanbul, August 2012.
- **Egemen K. Çetinkaya**, Justin P. Rohrer, and James P.G. Sterbenz, “Resilience of Backbone Provider Networks,” in *IEEE INFOCOM*, Orlando, FL, March 2012.
- **Egemen K. Çetinkaya**, Justin P. Rohrer, James P.G. Sterbenz, “Resilience Modelling of Networks against Adaptive Challenges,” in *IFIP IWSOS*, Delft, March 2012.
- Justin P. Rohrer, **Egemen K. Çetinkaya**, and James P.G. Sterbenz, “Multilayer Network Resilience Analysis and Experimentation on GENI,” First DFG/GENI Doctoral Consortium Poster Session, 10th GENI Engineering Conference (GEC10), San Juan, PR, March 2011.

## ADVISING & MENTORING

### *Ph.D. Dissertation Committee Member*

12. Chandreyee Bhowmick, Missouri University of Science and Technology, Electrical Engineering (pending), Advisor: Prof. Jagannathan Sarangapani
11. MD Azharul Islam, Missouri University of Science and Technology, Computer Science (pending), Advisor: Prof. Sanjay K. Madria
10. Hadi Ataei, Missouri University of Science and Technology, Computer Engineering (pending), Advisor: Prof. Mehdi Ferdowsi
9. San Yeung, Missouri University of Science and Technology, Computer Science (pending), Advisor: Prof. Sanjay K. Madria
8. Vijay K. Shah, Missouri University of Science and Technology, Computer Science (pending), Co-Advisors: Prof. Sajal Das and Prof. Simone Silvestri
7. Arul Mathi Maran Chandran, Missouri University of Science and Technology, Electrical Engineering (pending), Advisor: Prof. Maciej Zawodniok
6. Armita Abedijaberi, Missouri University of Science and Technology, Computer Science (pending), Advisor: Prof. Jennifer Leopold
5. Husam H. Nassr, Missouri University of Science and Technology, Electrical Engineering (pending), Advisor: Prof. Kurt L. Kosbar
4. Amir Modarresi, The University of Kansas, Computer Science (pending), Advisor: Prof. James P.G. Sterbenz
3. Sima Das, Missouri University of Science and Technology, Computer Science “Efficient Algorithms for Analyzing Large Scale Network Dynamics: Centrality, Community and Predictability,” 2017, Advisor: Prof. Sajal K. Das
2. Shanshan Bi, Missouri University of Science and Technology, Electrical Engineering, “Data Analytics for Stochastic Control and Prognostics in Cyber-Physical Systems,” 2017, Advisor: Prof. Maciej Zawodniok
1. Weimin Duan, Missouri University of Science and Technology, Electrical Engineering, “Low-Complexity Iterative Receiver Algorithms for Multiple-Input Multiple-Output Underwater Wireless Communications,” 2016, Advisor: Prof. Yahong Rosa Zheng

### *M.S. Thesis Students*

1. Mortada A. Aman, Missouri University of Science and Technology, Computer Engineering, “Analysis of Outsourcing Data to the Cloud Using Autonomous Key Generation,” 2017

*M.S. Non-Thesis Students*

7. Dixit Verma, Missouri University of Science and Technology, Computer Engineering, "Vehicular Network Security," 2018 (Pending)
6. Vivekathreya Krishnan, Missouri University of Science and Technology, Computer Engineering, "Mobile Edge Network Resilience," 2018 (Pending)
5. Anuja S. Bhave, Missouri University of Science and Technology, Computer Engineering, "Robustness of Power Grid Topologies Against Centrality-Based Attacks," 2016
4. Venu Madhav Kamaraju, Missouri University of Science and Technology, Computer Engineering, "Network Security Experimentation on the GENI Testbed," 2016
3. Mani Chaitanya Reddy Gorla, Missouri University of Science and Technology, Computer Engineering, "Ping Flood Attack Experimentation on the GENI Testbed," 2015
2. Rajgopal Yarlagadda, Missouri University of Science and Technology, Computer Engineering, "Evolution of Global Crude Petroleum Dependency Graph," 2015
1. Srinath Pinnaka, Missouri University of Science and Technology, Computer Engineering, "Modeling of Critical Infrastructures," 2015

*M.S. Thesis Committee Member*

2. Kiana Khalilnejad, Missouri University of Science and Technology, Electrical Engineering, pending, Advisor: Prof. Pourya Shamsi
1. Erik Burgdorf, Missouri University of Science and Technology, Computer Engineering, "Predicting the Impact of Data Corruption on the Operation of Cyber-Physical Systems," 2017, Advisor: Prof. Sahra Sedigh Sarvestani

*Undergraduate Students*

- Undergraduate research students:
  7. Madison Li Childress, Missouri University of Science and Technology, Computer Engineering (pending)
  6. Max G. Medina, Missouri University of Science and Technology, Electrical and Computer Engineering (pending)
  5. Jared W. Hanisch, Missouri University of Science and Technology, Computer Engineering (pending)
  4. Tyler Andrews, Missouri University of Science and Technology, Computer Engineering (pending)
  3. Richard E. Snyder, Missouri University of Science and Technology, Computer Engineering (pending)
  2. Ian H. Pittwood, Missouri University of Science and Technology, Computer Engineering (pending)
  1. Tristan A. Shatto, Missouri University of Science and Technology, Computer Engineering (pending)

- Freshman student advising at Missouri University of Science and Technology
  - Advised 24 freshman students during Fall 2017 and Spring 2018
  - Advised 43 freshman students during Fall 2016 and Spring 2017
  - Advised 45 freshman students during Fall 2015 and Spring 2016
  - Advised 38 freshman students during Fall 2014 and Spring 2015

**PROFESSIONAL** *Journal and Magazine Activities*  
**SERVICE**

1. *Guest Editor* for IEEE-HKN Bridge Magazine, Cybersecurity special issue, 2016

*Conference and Workshop Activities*

12. *TPC Member* for IFIP Networking 2018
11. *Program Co-Chair* for Central Area Networking and Security Workshop 2017
10. *TPC Member* for IEEE/IFIP DRCN 2017, 2016, 2015
9. *TPC Member* for IEEE GLOBECOM Workshop on Smart Grid Resilience 2015
8. *Session Chair* for IEEE/IFIP DRCN 2015
7. *TPC Member* for IEEE PerCom Work-in-Progress Session 2015
6. *TPC Member* for IEEE/IFIP RNDM 2014
5. *TPC Member* for IEEE VTC 2012 – Spring
4. *TPC Member* for IEEE WNR 2011
3. *Session Chair* for IEEE WCNC 2011
2. *Shadow TPC Member* for IFIP IWSOS 2011
1. *TPC Member* for ACM-SIGWEB ACC 2011

*Journal and Magazine Reviews*

21. Springer's Journal of Network and Systems Management (2017, 2016×4, 2013×2)
20. IEEE/ACM Transactions on Networking (2017, 2016, 2014×2, 2013)
19. AAAS Science Advances Journal (2017)
18. Elsevier Computer Communications Journal (2017)
17. IEEE Communications Magazine (2017×3, 2016×4, 2014)
16. Springer Telecommunication Systems Journal (2017, 2016, 2015)
15. Elsevier Journal of Parallel and Distributed Computing (2017, 2016)
14. Springer Annals of Telecommunications Journal (2017×2)
13. IEEE Transactions on Dependable and Secure Computing (2016)
12. Springer Computing Journal (2016)
11. IEEE Communications Letters (2015×3)
10. Wiley Networks Journal (2015)
9. IEEE Transactions on Services Computing (2015)
8. IEEE Access Journal (2015)
7. Elsevier Journal of Network and Computer Applications (2014)
6. Elsevier Computer Networks Journal (2013)
5. IEEE Transactions on Vehicular Technology (2012)

4. IEEE Vehicular Technology Magazine (2011)
3. IEEE Communications Surveys & Tutorials Journal (2011)
2. AEÜ - International Journal of Electronics and Communications (2011)
1. EURASIP Journal on Wireless Communications and Networking (2011)

*Conference and Workshop Reviews*

15. Conference on Decision and Game Theory for Security (GameSec 2016)
14. Complex Adaptive Systems Conference (2016)
13. IEEE Next Generation Networking Symposium (ICC NGN 2015)
12. IEEE/IFIP International Conference on the Design of Reliable Communication Networks (DRCN 2013, 2011, 2009)
11. IEEE Online Conference on Green Communications (GreenCom 2012, 2011)
10. IEEE Global Communications Conference (GLOBECOM 2012)
9. IEEE Vehicular Technology Conference (VTC 2012 Fall)
8. IFIP International Conference on Networking (Networking 2012, 2011)
7. IEEE ICC Workshop on Re-think ICT Infrastructure Designs and Operations (RIDO 2012)
6. IEEE Conference on Computer and Communication Technology (ICCCT 2011)
5. IEEE Workshop on the Network of the Future (FutureNet III 2010)
4. ACM Conference on Future Internet Technologies (CFI 2010)
3. IEEE Next Generation Networking & Internet Symposium (GLOBECOM NGNI 2009)
2. IEEE Conference on Computer Communications and Networks (ICCCN 2009)
1. IFIP Workshop on Self-Organizing Systems (IWSOS 2008)

*Proposal Reviews*

8. CFI (Canada Foundation for Innovation) Proposal Review Panel, 2018
7. NCSTE (Kazakhstan National Center of Science and Technology Evaluation) Proposal Review Panel, 2017
6. The Ralph E. Powe Junior Faculty Enhancement Award Review Panel, 2017
5. CIRI @ UIUC (Critical Infrastructure Resilience Institute at the University of Illinois at Urbana-Champaign) Proposal Review Panel, 2016
4. UTSA (The University of Texas at San Antonio) Limited Submissions Review Panel, 2016
3. NSF (National Science Foundation) Proposal Review Panel, 2016
2. UMRB (University of Missouri Research Board) Proposal Review Panel, 2016, 2015
1. DHS (Department of Homeland Security) Proposal Review Panel, 2014

*Academic Service*

2. *Treasurer* of the IEEE Rolla Subsection, 2014 to Present
1. *Member* of Faculty Search Committee at Missouri University of Science and Technology Computer Science Department, 2017

**CIVIC  
SERVICE**

- *Volunteer* for the Celebration of Nations Festival, Rolla, MO, Sep. 2016
- *Judge* for the Conrad Spirit of Innovation Challenge, Online, Jan. 2015
- *Judge* for the US FIRST Robotics Tournament, Rolla, MO, Jan. 2015
- *Judge* for the Great Plains Future City Competition, Lawrence, KS, Jan. 2012
- *Judge* for the Douglas County Science Fair, Lawrence, KS, 2013, 2012, 2009

**AFFILIATIONS**

- *Senior Member* of IEEE – Communications Society, HKN
- *Member* of ACM – SIGCOMM
- *Member* of Sigma Xi