Dr. C. Emre Koksal

Professor
Department of Electrical and Computer Engineering
The Ohio State University

Education   MASSACHUSETTS INSTITUTE OF TECHNOLOGY   Cambridge, MA
Ph.D. degree in Electrical Engineering and Computer Science, September 2002. Thesis supervised by Professor Robert G. Gallager. Thesis title: "Providing Quality of Service over High Speed Switches and Optical Networks."

MASSACHUSETTS INSTITUTE OF TECHNOLOGY   Cambridge, MA
Certificate on Financial Technology, May 2001.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY   Cambridge, MA
S.M. degree in Electrical Engineering and Computer Science, May 1998. Supervised by Dr. Richard A. Barry and Prof. Robert G. Gallager. Thesis title: "Analysis of Coherent Crosstalk in WDM-AONs."

MIDDLE EAST TECHNICAL UNIVERSITY   Ankara, TURKEY
B.S. degree in Electrical Engineering, June 1996. Minor in mathematics.

Experience   DATANCHOR   Columbus, OH
August 2017 – present
Founder. DAtAnchor develops a novel crypto-technology that anchors the data consumption within the network boundaries, serving as a backstop against inevitable breaches. It provides a secure gateway to access the files in the cloud and the database, with the added features of revocability and physical access control, enabling efficient and automated data governance. DAtAnchor is currently being funded via an Accelerator Award provided by Ohio Innovation Fund.

ELECTRICAL AND COMPUTER ENGINEERING, THE OHIO STATE UNIVERSITY   Columbus, OH
December 2017 – present
Professor (subject to the approval of Board of Trustees).

ELECTRICAL AND COMPUTER ENGINEERING, THE OHIO STATE UNIVERSITY   Columbus, OH
September 2013 – December 2017
Associate Professor.

ELECTRICAL AND COMPUTER ENGINEERING, THE OHIO STATE UNIVERSITY   Columbus, OH
October 2006 – September 2013
Assistant Professor.

SCHOOL OF COMPUTER AND COMMUNICATION SCIENCES, EPFL

Lausanne, SWITZERLAND

October 2004 – September 2006

Senior researcher.

CSAIL, MIT   Cambridge, MA

October 2002 – September 2004

Postdoctorate Scholar.

MIT LAB. FOR INFORMATION AND DECISION SYSTEMS   Lexington, MA

1998 – 2003

Research Assistant.

MIT LINCOLN LABORATORY   Lexington, MA

1996 – 1998

Research Assistant.

ARDEN ASSET MANAGEMENT   New York, NY

May 2004

Independent consultant.

SYCAMORE NETWORKS, INC.   Tewksbury, MA

Jan. –Aug. 1999

Intern Engineer.

TELLABS, INC.   Cambridge, MA

1998, summer

Summer intern.

ASELSAN MILITARY ELECTRONICS, INC.   Ankara, Turkey

1994, 1995, summer

Summer intern.

Teaching   THE OHIO STATE UNIVERSITY   Columbus, OH

Department of Electrical and Computer Engineering   Au 2013, 2014, 2015

ECE 5000: Introduction to Analog and Digital Communciation

THE OHIO STATE UNIVERSITY   Columbus, OH

Department of Electrical and Computer Engineering   Sp 2013, 2015, 2017

ECE 7001: Stochastic Processes, Detection and Estimation

THE OHIO STATE UNIVERSITY   Columbus, OH

Department of Electrical and Computer Engineering   Au 2012

ECE 6001: Probability and Random Variables

THE OHIO STATE UNIVERSITY   Columbus, OH

Department of Electrical and Computer Engineering   Au 2017

ECE 7003: Wireless Communication

THE OHIO STATE UNIVERSITY   Columbus, OH
Department of Electrical and Computer Engineering   Wi 2011
ECE 801.02: Information Theory

THE OHIO STATE UNIVERSITY   Columbus, OH
Department of Electrical and Computer Engineering   Wi 2010, 2012, Sp. 2014, 2016
ECE 894/ECE 7103: Discrete Stochastic Processes

THE OHIO STATE UNIVERSITY   Columbus, OH
Department of Electrical and Computer Engineering   Wi, Au 2009, 2010
ECE 351: Systems I

THE OHIO STATE UNIVERSITY   Columbus, OH
Department of Electrical and Computer Engineering   Wi 2008, Au 2011
ECE 352: Systems II

THE OHIO STATE UNIVERSITY   Columbus, OH
Department of Electrical and Computer Engineering   Sp 2007–2012
ECE 806: Detection and Estimation Theory

THE OHIO STATE UNIVERSITY   Columbus, OH
Department of Electrical and Computer Engineering   Wi 2007
ECE 805: Random Processes and Linear Systems

THE OHIO STATE UNIVERSITY   Columbus, OH
Department of Electrical and Computer Engineering   Au 2006–2008
ECE 804: Probabilistic Signal Analysis

MASSACHUSETTS INSTITUTE OF TECHNOLOGY   Cambridge, MA
Department of Electrical Engineering and Computer Science   Fall 2000, Spring 2001
Part of the team building and developing the class 6.962, Graduate Seminar on Wireless
Communication and Information Theory.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY   Cambridge, MA
Department of Electrical Engineering and Computer Science   Spring 1998
Teaching Assistant for high-level graduate course, 6.262: Discrete Stochastic Processes.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY   Cambridge, MA
Department of Electrical Engineering and Computer Science   Fall 1997
Teaching Assistant for the the course, 6.917 (6.401/6.450): Introduction to Digital Com-
munication.

**Students
and
Postdocs**

Postdocs:

1. **Yin Sun**, co-Advisor (joint with Ness B. Shroff), Postdoctoral Fellow, Sep. 2011 -
   Aug. 2017.
   Current position: Assistant Professor, Auburn University.

2. **Morteza Hashemi**, co-Advisor (joint with Ness B. Shroff), Postdoctoral Fellow, Jun. 2016 - present.
   Position (starting Fall 2018): Assistant Professor, University of Kansas.

PhD Students:

1. **Rahul Srivastava**, Advisor, Doctoral Student, Oct. 2006 - Dec. 2010.
   Thesis title: "Efficient Energy Management in Wireless Sensor Networks."
   Current position: R & D Engineer, Broadcom Inc., CA.

2. **Rohit Aggarwal**, co-Advisor (joint with Philip Schniter), Doctoral Student, Oct. 2007 - June 2012.
   Thesis title: "Resource Allocation and Design Issues in Wireless Systems"
   Current position: R & D Engineer, Qualcomm, Inc., San Diego, CA.

3. **Arun Sridharan**, Advisor, Doctoral Student, Oct. 2006 - Dec. 2012.
   Thesis title: "Low Complexity Scheduling in Wireless Networks"
   Current position: Network Optimization Architect, Akamai, Inc., Cambridge, MA.

4. **Zhoujia Mao**, co-Advisor (joint with Ness B. Shroff), Doctoral Student, Jan. 2008 - Aug. 2013.
   Thesis title: "Approximation Algorithms Design for Resource Management in Communication Networks"
   Current position: R & D Engineer, Facebook, Inc., Santa Clara, CA.

5. **Onur Gungor**, Advisor, Doctoral Student, Oct. 2008 - Oct. 2014.
   Thesis title: "Information Theory Enabled Secure Wireless Communication, Key Generation and Authentication"
   Current position: Data Scientist Walmart Labs, San Fransisco, CA.

6. **Ozan Basciftci**, Advisor, Doctoral Student, Jan. 2012 - Jun. 2016.
   Thesis title: "Private and Secure Data Communication: Information Theoretic Approach"
   Current position: R & D Engineer, Qualcomm, Inc., Boston, MA.

7. **Fangzhou Chen**, Advisor, Doctoral Student, Oct. 2010 - Apr. 2017.
   Thesis title: "Wireless Communication Under Imperfect Source and Channel Information"
   Current position: Founder, Smog Conquer Environmental Protection Technology LLC.

8. **Amr Abdelaziz**, co-Advisor (joint with Hesham El Gamal), Doctoral Student, Jun. 2015 - Aug. 2017.
   Thesis title: "Information Theoretical Studies on MIMO Channel with Limited Channel State Information"
   Current position: Assistant Professor, Military Academy of Egypt, Cairo.

9. **Deniz Sargun**, Advisor, Doctoral Student, Sep. 2016 - present.

10. **Bugra Tulay**, Advisor, Doctoral Student, Jan. 2017 - present.

11. **Yahia Sharaba**, co-Advisor (joint with Eylem Ekici), Doctoral Student, Sep. 2016 - present.

12. **Altug Karakurt**, co-Advisor (joint with Atilla Eryilmaz), Doctoral Student, Mar. 2017 - present.

13. **Johnny Tang**, co-Advisor (joint with Abhishek Gupta), Doctoral Student, Mar. 2017 - present.

14. **Yuntian Deng**, co-Advisor (joint with Ness Shroff), Doctoral Student, Aug. 2017 - present.

Visiting (co-advised) PhD students:

15. **Jiahui Li**, EE, Tsinghua University, (visited OSU between Aug. 2016 - Aug. 2017).

16. **Junlin Zhao**, EE, Imperial College, (visited OSU between Aug. 2016 - Dec. 2016).

MS Students

1. **Harihara Indukuri**, Advisor, MS Student, Feb. 2016 - Aug. 2017.
   Current position: Software Developer, Expedia, Inc., Chicago, IL.

2. **Ghada Saleh**, co-Advisor (joint with Ness B. Shroff), MS Student, Aug. 2012 - Jun. 2015.
   Thesis title: "Resource Allocation for Optimum Power Usage in Wireless Networks"
   Current position: R & D Engineer, Mathworks Inc., Natick, MA.

3. **Yuhui Feng**, Advisor, MS Student, Aug. 2015 - Jun. 2016.
   Thesis title: "Enhancing Efficiency of Beaconing in VANETs"
   Current position: Software Engineer at AppDynamics.

4. **Xingchi Su**, Advisor, MS Student, May 2016 - Dec. 2016.
   Current position: Software Engineer, Amazon, Inc.

5. **Ran Lin**, Advisor, MS Student, Aug. 2012 - Aug. 2013.
   Current position: Software Engineer, SafeAuto Insurance.

6. **Nithin Sugavanam**, co-Advisor (joint with Atilla Eryilmaz), MS Student, Jan. 2011 - Jun. 2012.
   Current position: PhD student, OSU ECE.

7. **Tianyou Kou**, co-Advisor (joint with Eylem Ekici), MS Student, Aug. 2011 - May 2012.
   Current position: Software Engineer, Huntington Bank.

8. **Ju Gao**, Advisor, MS Student, Aug. 2012 - Aug. 2013.
   Current position: PhD student, OSU ECE.

9. **Boyi Gong**, Advisor, MS Student, Aug. 2013 - 2014.

10. **Jiawei Liu**, Advisor, MS Student, Sep. 2014 - Jun. 2016.
    Current position: PhD student, UT Dallas.

11. **Tom Jiang**, co-Advisor (joint with Atilla Eryilmaz), MS Student, May 2016 - present.

12. **Guochen Wang**, co-Advisor (joint with Atilla Eryilmaz), MS Student, May 2016 - present.

13. **Haozhou Wu**, Advisor, MS Student, May 2016 - present. *Thesis title*: "Intra-vehicular Data Broadcasting."

14. **Phani Kamisetti**, Advisor, MS Student, Sep. 2017 - present.

BS Students

1. **Elaine Song**, Advisor, BS Student, Jan. 2009-Jun. 2010.
   Current position: MS Student, Princeton University.

2. **Ahmed Gashgash**, Advisor, BS Student, Jan. - Dec. 2016.

3. **Nathan Weirich**, Advisor, BS Student, Mar. 2017 - present.

4. **Hongliang Si**, Advisor, BS Student, Mar. 2017 - present.

PhD Committee Memberships

External PhD committee memberships:

1. Yu Wang, ECE, National University of Singapore, Thesis title: "Design of medium access control techniques for cooperative wireless networks."

2. Shahid Mehraj Shah, ECE, Indian Institute of Science, Thesis title: "Enhancing secrecy rate and resource allocation in wiretap channels."

3. Yunus Sarikaya, - Electronics Eng., Sabanci University, Turkey, Thesis title: ") Dynamic control of wireless networks with confidential communications."

Internal PhD committee memberships (non-advisor):

1. Nilgun Ferhatosmanoglu (Industrial and Systems Eng.)

2. Young Han Nam

3. Sibasish Das

4. Kevin Schultz

5. Ren-Shiou Liu (Computer Science and Engineering)

6. Sugumar Murugesan

7. Ozan Koyluoglu

8. Mohamad Shahmohammadi

9. Srikanth Hariharan

10. Taewoo Kwon (Computer Science and Engineering)

11. E.J. Passias (Sociology)

12. Swapna Buccapatnam

13. Yang Yang

14. Yousi Zhang

15. Niranchana Manivannan

16. Andrew Kintz

17. You Han

18. Vivek Yanemandra (Computer Science and Engineering)

19. Ashley Brown (Psychology)

Research Topics

My research interests span a number of topics in cybersecurity, wireless communication, information theory, and networking. Some of my recent studies include:

1. **Wireless communication:** Adaptive communication systems with limited feedback, channel estimation, mmWave communication systems

2. **Information theory:** Information theoretic security, distributed source coding

3. **Machine learning:** Change and outlier detection

4. **Cybersecurity:** Data Security, physical-layer security, security of vehicular communication systems

5. **Wireless networking:** Network control and resource allocation, Internet of Things

6. **Energy management:** Energy-efficient communication schemes, energy harvesting wireless networks, joint wireless energy and information transfer

7. **Nano communications and networking:** Carbon Nanotube Antennas, Nanoreceiver design

8. **Financial economics:** Detection and classification of crises, risk measurement

In the rest of the document, the students advised as sole advisor are marked with red text and the students co-advised are marked with blue text.

Patents

1. Gungor O. and Koksal C. E., "Generation of encryption keys based on location", *US Patent 9819488B2*

2. Tallos R., Chen C., Koksal C. E., and Shroff N. B., "Systems capable of self-harvesting energy from wireless devices and methods using the same," *US, EP, WO Pending*

3. Tallos R., Chen C., Koksal C. E., and Shroff N. B., "Systems capable of self-harvesting energy from wireless devices and methods using the same," *US, EP, WO Pending*
The idea that led to this technology has been generated jointly by C. E. Koksal and N. B. Shroff. It is being commercialized by Nikola Labs and is featured at various outlets including CNN, Forbes, Wired, Business Insider, Columbus Dispatch, and NPR.

4. Sun Y., Koksal C. E., Lee S. J., and Shroff N. B., "Wireless transmitter to optimize throughput by controlling time-average block size of signals to receivers," *US, WO Pending*

5. Koksal C. E., "Rapid Whisperer: A multi-kbps acoustic communication system for intra-vehicular and localized data transmission," *US Patent pending*

6. Koksal C. E., "Context-based access control and revocation for data governance and loss mitigation," *US Patent pending*

Publications   **Book Chapters**

1. Koksal C. E., "Quality-Aware Routing Metrics in Wireless Mesh Networks," *Chapter 8, Wireless Mesh Networks: Architectures and Protocols", Eds. E. Hossain and K. K. Leung, Springer 2007 (ISBN: 978-0-387-68839-8)*

2. Mao Z., Koksal C. E., and Shroff N. B., "Cross-Layer Resource Allocation in Energy Harvesting Sensor Networks," *Rechargeable Sensor Networks: Technology, Theory and Application, Eds. J. Chen, S. He, and Y. Sun, World Scientific Publishing 2013*

Journal Publications (published/in press)

1. Hashemi M., Koksal C. E., and Shroff N. B., "RF-Assisted Millimeter Wave Beamforming and Communications to Achieve Low Latency and High Energy Efficiency in 5G Systems," *IEEE Transactions on Communication - to appear*.

2. Sun Y., Uysal-Biyikoglu E., Yates R., Koksal C. E., and Shroff N. B., "Update or Wait: How to Keep Your Data Fresh," *IEEE/ACM Transactions on Information Theory, Volume 63, Issue 11, Nov. 2017, Page: 7492-7508*.

3. Bacinoglu T., Uysal-Biyikoglu E., and Koksal C. E., "Finite Horizon Energy-Efficient Scheduling with Energy Harvesting Transmitters over Fading Channels," *IEEE Transactions on Wireless Communication - to appear*.

4. Gungor O. and Koksal C. E. "On the Basic Limits of RF-Fingerprint Based Authentication," *IEEE Transactions on Information Theory - Volume 62, Issue 8, Aug. 2016, Page: 4523-4543*.

5. Sarikaya Y., Ercetin O., and Koksal C. E., "Dynamic Network Control for Confidential Multi-hop Communications," *IEEE/ACM Transactions on Networking, Volume 24, Issue 2, Apr. 2016, Page: 1181-1195*.

6. Mao Z., Koksal C. E., and Shroff N. B., "Optimal Online Scheduling with Arbitrary Hard Deadlines in Multihop Communication Networks," *IEEE/ACM Transactions on Networking, Volume 24, Issue 1, Feb. 2016, Page: 177-189*.

7. Basciftci Y. O., Gungor O., Koksal C. E., and Ozguner F., "On the Secrecy Capacity of Block Fading Channels with a Hybrid Adversary," *IEEE Transactions on Information Theory, Volume 61, Issue 3, Mar. 2015, Page: 1325-1343*.

8. Gungor O., Chen F., and Koksal C. E., "Secret Key Generation via Localization and Mobility," *IEEE Transactions on Vehicular Technology, Volume 64, Issue 6, Jun. 2015, Page: 2214-2230*.

9. Sarikaya Y., Ercetin O., and Koksal C. E., "Confidentiality-Preserving Control of Uplink Cellular Wireless Networks Using Hybrid ARQ," *IEEE/ACM Transactions on Networking, Volume 23, Issue 5, Oct. 2015, Page: 1457-1470.*

10. Liu H., Yang J., Wang Y., Chen Y., and Koksal C. E., "Group Secret Key Generation via Received Signal Strength: Protocols, Achievable Rates, and Implementation," *IEEE Transactions on Mobile Computing, Volume 13, Issue 12, Apr. 2014, Page: 2820-2835.*

11. Sun Y., Koksal C. E., Shroff N. B., "Capacity of Compound MIMO Gaussian Channels With Additive Uncertainty," *IEEE Transactions on Information Theory, Volume 59, Issue 12, Dec. 2013, Page: 8267-8274.*

12. Mao Z., Koksal C. E., and Shroff N. B., "Achieving Full Secrecy Rate with Low Delays: An Optimal Control Approach," *IEEE Journal on Selected Areas of Communication, Volume 31, Issue 9, Sep. 2013, Page: 1944-1956.*

13. Gungor O., Tan J., Koksal C. E., El Gamal H., and Shroff N. B., "Secrecy Outage Capacity of Fading Channels," *IEEE Transactions on Information Theory, Volume 59, Issue 9, Sep. 2013, Page: 5379-5397.*

14. Srivastava R. and Koksal C. E., "Basic Performance Limits and Tradeoffs in Energy Harvesting Sensor Nodes with Finite Data and Energy Storage," *IEEE/ACM Transactions on Networking, , Volume 21, Issue 4, Aug.. 2013, Page: 1049-1062.*

15. Aggarwal R., Koksal C. E., and Schniter P., "On the Design of Large Scale Wireless Systems," *IEEE Journal on Selected Areas of Communication, Volume 31, Issue 2, Feb. 2013, Page: 215-225.*

16. Koksal C. E., Ercetin O., and Sarikaya Y. "Control of Wireless Networks with Secrecy," *IEEE/ACM Transactions on Networking, Volume 21, Issue 1, Feb. 2013, Page: 324-337.*

17. Koksal C. E. and Ekici E., "High-Rate RF Nanoreceivers with CNT Antennas," *IEEE Wireless Communications Magazine, Volume 19, Issue 5, Oct. 2012, Page: 52-58.*

18. Aggarwal R., Koksal C. E., and Schniter P., "Joint Scheduling and Resource Allocation in OFDMA Downlink Systems via ACK/NAK Feedback," *IEEE Transactions on Signal Processing, Volume 60, Issue 6, June 2012, Page: 3217-3227.*

19. Koyluoglu O. O., Koksal C. E., and El Gamal H., "On Secrecy Capacity Scaling in Wireless Networks," *IEEE Transactions on Information Theory, Volume 58, Issue 5, May 2012, Page: 3000-3015.*

20. Koksal C. E. and Schniter P., "Robust Rate-Adaptive Wireless Communication Using ACK/NAK-Feedback," *IEEE Transactions on Signal Processing, Number 60, Issue 4, April 2012, Page: 1752-1765.*

21. Mao Z., Koksal C. E., and Shroff N. B., "Near Optimal Power and Rate Control of Multi-hop Sensor Networks with Energy Replenishment: Basic Limitations with Finite Energy and Data Storage," *IEEE Transactions on Automatic Control, Volume 57, Issue 4, April 2012, Page: 815-829.*

22. Sridharan A., Koksal C. E., and Uysal-Biyikoglu E., "A Greedy Link Scheduler for Wireless Networks with Gaussian Multiple Access and Broadcast Channels,"

IEEE/ACM Transactions on Networking Volume 20, Issue 1, February 2012, Page: 100-113.

23. Ablay G., Koksal C. E., and Aldemir T., "Chaotic Data Encryption for Long-Distance Monitoring of Nuclear Reactors," *Nuclear Science and Engineering, Volume 170, Issue 1, January 2012, Page: 27-43.*

24. Aggarwal R., Assaad M., Koksal C. E., and Schniter P., "Joint Scheduling and Resource Allocation in the OFDMA Downlink: Utility Maximization under Imperfect Channel-State Information," *IEEE Transactions on Signal Processing, Volume 59, Issue 11, November 2011, Page: 5569-5604.*

25. Koksal C. E., Ekici E., and Rajan S., "Design and Analysis of Systems Based on RF Receivers with Multiple Carbon Nanotube Antennas," *Nano Communication Networks, Volume 1, Issue 3, September 2010, Page: 160-172.*

26. Koksal C. E. and Ekici E., "A Nanoradio Architecture for Interacting Nanonetworking Tasks," *Nano Communication Networks, Volume 1, Issue 1, Mar. 2010, Page: 63-75.*

27. Koksal C. E., "Rate Quantization and the Speedup Required to Achieve 100% Throughput for Multicast over Crossbar Switches," *IEEE/ACM Transactions on Networking, Volume 18, Issue 4, Aug. 2010, Page: 1207-1219.*

28. Srivastava R. and Koksal C. E., "Energy Optimal Transmission Scheduling in Wireless Sensor Networks," *IEEE Transactions on Wireless Communication, Volume 9, Issue 5, May 2010, Page: 1550-1560.*

29. Aggarwal R., Schniter P., and Koksal C. E., "Rate Adaptation via Link-Layer Feedback for Goodput Maximization over a Time-Varying Channel," *IEEE Transactions on Wireless Communication, Volume 8, Issue 8, Aug. 2009, Page: 4276-4285.*

30. Liu S., Srivastava R., Koksal C. E., and Sinha P., "A Hidden Markov Model Based Scheme for Energy Efficient Data Transmission in Sensor Networks," *Elsevier Ad Hoc Networks Journal, Vol. 7, Issue 5, Jul. 2009, Page: 973 - 986.*

31. Miu A., Balakrishnan H. and Koksal C. E., "Multi-Radio Diversity in Wireless Networks,"*Wireless Networks, Volume 13, Issue 6, Dec. 2007, Pages: 779 - 798.*

32. Koksal C. E., "An Analysis of Blocking Switches Using Error Control Codes," *IEEE Transactions on Information Theory, Volume 53, No 8, Aug. 2007.*

33. Koksal C. E., Balakrishnan H., "Quality Aware Routing Metrics for Time-Varying Wireless Mesh Networks," *IEEE Journal on Selected Areas of Communication Special Issue on Multi-Hop Wireless Mesh Networks, Volume 24, Issue 11, Nov. 2006 Page: 1984–1994.*

Invited Panels

- Invited member of the panel "Wireless Security in the Era of Spectrum Sharing," IEEE CNS 2016

Conference Publications (published/in press)

1. Karakurt A., Eryilmaz A., and Koksal C. E., "Quick Discovery of Mobile Devices in the Many-User Regime - Carrier Sensing or Simultaneous Detection?," **Best Paper Awardee**, *Proceedings of IEEE WiOpt 2018, Shanghai, China*

2. Hashemi M., Sabrawal A., Koksal C. E., and Shroff N. B., "Efficient beam alignment in millimeter-wave systems using contextual bandits," *Proceedings of IEEE INFOCOM 2018, Honolulu, HI*

3. Shabara Y., Koksal C. E., and Ekici E., "Linear block coding for efficient beam discovery in millimeter-wave communication networks," *Proceedings of IEEE INFOCOM 2018, Honolulu, HI*

4. Abdelaziz A. and Koksal C. E., "Fundamental Limits of Covert Communication over MIMO AWGN Channel," *Proceedings of IEEE CNS 2017*.

5. Hashemi M., Koksal C. E., and Shroff N. B., "Rate-Optimal Power and Bandwidth Allocation in an Integrated RF-Millimeter Wave Communications System," *Proceedings of Asilomar Conference on Signals, Systems and Computers, 2017*

6. Li J., Sun Y., Xiao L., Zhou S., and Koksal C. E., "Analog Beam Tracking in Linear Antenna Arrays: Convergence and Optimality," *Proceedings of Asilomar Conference on Signals, Systems and Computers, 2017*

7. Hashemi M., Koksal C. E., and Shroff N. B., "Hybrid RF-mmWave Communications to Achieve Low Latency and High Energy Efficiency in 5G Cellular Systems," *Proceedings of IEEE WiOpt 2017, Paris, France*

8. Abdelaziz A., Elbayoumi A., Koksal C. E, and El Gamal H., "On The Compound MIMO Wiretap Channel with Mean Feedback," *Proceedings of IEEE ISIT 2017, Aachen, Germany*

9. Abdelaziz A., Koksal C. E, and Burton R., "Message Authentication and Secret Key Agreement in VANETs via Angle of Arrival," *Proceedings of IEEE VNC 2016, Columbus, OH*

10. Abdelaziz A., Koksal C. E, and El Gamal H., "On the Security of Angle of Arrival Estimation," *Proceedings of IEEE CNS 2016, Philadelphia, PA*

11. Chen F., Sun Y., Qin Y., and Koksal C. E., "Checks and Balances: A Low-complexity High-gain Uplink Power Controller for CoMP," *Proceedings of IEEE Globecom 2016, Washington D.C.*

12. Bakshi A., Chen L., Srinivasan K., Koksal C. E., and Eryilmaz A., "EMIT: An Efficient MAC Paradigm for the Internet of Things," *Proceedings of IEEE INFOCOM 2016, San Francisco, CA*. Acceptance rate: 18.2%

13. Sun Y., Uysal-Biyikoglu E., Yates R., Koksal C. E., and Shroff N. B., "Update or Wait: How to Keep Your Data Fresh," *Proceedings of IEEE INFOCOM 2016, San Francisco, CA*. Acceptance rate: 18.2%

14. Basciftci Y. O., Koksal C. E., and Ashikmin A., "Securing massive MIMO at the Physical Layer," *Proceedings of IEEE Conference on Communications and Network Security, CNS 15, Florence, Italy*. Acceptance rate: 28%

15. Basciftci Y. O., Chen F., Weston J., Burton R., and Koksal C. E., "How vulnerable is vehicular communication to physical layer jamming attacks?," *Proceedings of IEEE Vehicular Technology Conference, VTC 15, Boston, MA*. Acceptance rate: 46%

16. Chen F., Li B., and Koksal C. E., "Low-Delay Distributed Source Coding for Time-Varying Sources with Unknown Statistics," *Proceedings of IEEE INFOCOM 2015*, Hong Kong. Acceptance rate: 19.3%

17. Sun Y., Zheng Z., Koksal C. E., Kim K. H., and Shroff N. B., "Provably Delay Efficient Data Retrieving in Storage Clouds," *Proceedings of IEEE INFOCOM 2015*, Hong Kong. Acceptance rate: 19.3%

18. Basciftci Y. O. and Koksal C. E., "Delay Optimal Secrecy in Two-Relay Network," *IEEE GlobalSIP Symposium on Network Theory, GlobalSIP 14*, Atlanta, GA. Acceptance rate: unknown

19. Gungor O. and Koksal C. E., "RF-Fingerprint Based Authentication: Exponents and Achievable Rates," *IEEE Conference on Communications and Network Security (CNS): Wokshop on Physical-layer Methods for Wireless Security, PhySec 2014*, San Francisco, CA. Acceptance rate: 28%

20. Basciftci Y. O. and Koksal C. E., "Private Broadcasting with Probing Constraint," *IEEE International Workshop on Signal Processing Advances in Wireless Communications, SPAWC 2014*, Toronto, Canada. Acceptance rate: unknown

21. Sun Y., Koksal C. E., Kim K. H., and Shroff N. B., "Scheduling of Multicast and Unicast Services under Limited Feedback by using Rateless Codes," *Proceedings of IEEE INFOCOM 2014*, Toronto, Canada. Acceptance rate: 19.3%

22. Koksal C. E., "An Analysis of the Temporal Correlation of Interference in Extended Wireless Networks," *IEEE GlobalSIP Symposium on Network Theory, GlobalSIP 13*, Austin, TX. Acceptance rate: 19.3%

23. Mao Z., Koksal C. E., and Shroff N. B., "Fair Rate Allocation for Broadcast Channel with Confidential Messages," *IEEE GlobalSIP Symposium on Cyber-Security and Privacy, GlobalSIP 13*, Austin, TX. Acceptance rate: unknown

24. Saleh G., Koksal C. E., and Shroff N. B., "Optimal SINR Based Resource Allocation For Simultaneous Energy and Information Transfer," *IEEE GlobalSIP Symposium on Energy Harvesting and Green Wireless Communications, GlobalSIP 13*, Austin, TX. Acceptance rate: unknown

25. Gungor O., Koksal C. E., and El Gamal H., "An Information Theoretic Approach to RF Fingerprinting," *Proceedings of Asilomar Conference on Signals, Systems and Computers, 2013, Pacific Grove, CA*. Invited paper

26. Gungor O., Koksal C. E., and El Gamal H., "On Secrecy Outage Capacity of Fading Channels Under Relaxed Delay Constraints," *Proceedings of IEEE International Symposium on Information Theory, ISIT 2013, Istanbul, Turkey*. Acceptance rate: unknown

27. Basciftci Y. O., Koksal C. E., and Ozguner F., "To Obtain or not to Obtain CSI in the Presence of Hybrid Adversary," *Proceedings of IEEE International Symposium on Information Theory, ISIT 2013, Istanbul, Turkey*. Acceptance rate: unknown

28. Sun Y., Koksal C. E., and Shroff N. B., "Capacity of Compound MIMO Gaussian Channels with Additive Uncertainty," *Proceedings of IEEE International Symposium on Information Theory, ISIT 2013, Istanbul, Turkey*. Acceptance rate: unknown

29. Sridharan A., Joo C., and Koksal C. E., "Energy Efficient Greedy Link Scheduling in Wireless Networks," *Proceedings of Black Sea Conference on Communications and Networking, BlackSeaCom 2013, Batumi, Georgia*. Acceptance rate: unknown

30. Sarikaya Y., Ercetin O., and Koksal C. E.,"Dynamic Network Control for Confidential Multi-hop Communications," *Proceedings of WiOpt 2013, Tsukuba Science City, Japan*. Acceptance rate: 44.3%

31. Sun Y., Koksal C. E., Lee S. J., and Shroff N. B., "Network Control without CSI using Rateless Codes for Downlink Cellular Systems," *Proceedings of IEEE INFO-COM 2013, Turin, Italy*. Acceptance rate: 17.4%

32. Mao Z., Koksal C. E., and Shroff N. B., "Online Packet Scheduling with Hard Deadlines in Multihop Communication Networks," *Proceedings of IEEE INFOCOM 2013, Turin, Italy*. Acceptance rate: 17.4%

33. Sugavanam N., Eryilmaz A., and Koksal C. E., "Color of Interference and Joint Encoding and Random Access in Large Wireless Networks," *Proceedings of Asilomar Conference on Signals, Systems and Computers, 2012, Pacific Grove, CA*. Invited paper

34. Sridharan A., Joo C., and Koksal C. E., "Energy Efficient Greedy Link Scheduling and Power Control in Wireless Networks," *Proceedings of IEEE International Symposium on Information Theory, ISIT 2012, Cambridge, MA*. Acceptance rate: unknown

35. Sarikaya Y., Ercetin O., and Koksal C. E., "Wireless Network Control with Privacy Using Hybrid ARQ," *Proceedings of IEEE International Symposium on Information Theory, ISIT 2012, Cambridge, MA*. Acceptance rate: unknown

36. Kou T., Ekici E., and Koksal C. E., "Quality Control of CNT Forests via EM Probing," *Proceedings of NaNoNetworking Summit, N3Summit 2012, Barcelona, Spain*. Acceptance rate: unknown

37. Gungor O., Tan J., Koksal C. E., El Gamal H., and Shroff N. B., "Delay-Limited Wireless Communication with Secrecy," *Proceedings of Conference on Information Sciences and Systems, CISS 2012, Princeton, NJ*. Acceptance rate: unknown

38. Aggarwal R., Koksal C. E., and Schniter P., "Scaling Laws and Design Principles for Multi-Cellular Wireless OFDMA Systems," *Proceedings of IEEE INFOCOM 2012, Orlando, FL*. Acceptance rate: 18%

39. Gungor O., Chen F., and Koksal C. E., "Secret Key Generation from Mobility," *IEEE Globecom 2011, Workshop on Physical-Layer Security, Houston, TX*. Acceptance rate: ∼ 50%

40. Mao Z., Koksal C. E., and Shroff N. B., "Towards Achieving Full Secrecy Rate and Low Delays in Wireless Networks" *Proceedings of Allerton Conference on Communication, Contol, and Computing, Allerton 2011, Monticello, IL*. Invited paper

41. Sridharan A. and Koksal C. E., "A Greedy Link Scheduler for Wireless Networks with Fading Channels," *Proceedings of Asilomar Conference on Signals, Systems and Computers, 2011, Pacific Grove, CA*. Acceptance rate: unknown

42. Mao Z., Koksal C. E., and Shroff N. B., "Queue and Power Control for Rechargeable Sensor Networks under the SINR Interference Model" *Proceedings of Asilomar Conference on Signals, Systems and Computers, 2011, Pacific Grove, CA*. Invited paper

43. Koksal C. E. and Ekici E., "High-Rate RF Nanoreceivers with CNT Antennas," *Proceedings of NaNoNetworking Summit, 2011, Barcelona, Spain*. Acceptance rate: unknown

44. Gungor O., Koyluoglu O. O., El Gamal H., and Koksal C. E., "Proactive Source Coding," *Proceedings of IEEE International Symposium on Information Theory, ISIT 2011, St. Petersburg, Russia*. Acceptance rate: unknown

45. Aggarwal R., Assad M., Koksal C. E., and Schniter P., "Optimal Resource Allocation in OFDMA Downlink Systems With Imperfect CSI," *Proceedings of IEEE International Workshop on Signal Processing Advances in Wireless Communications, SPAWC 2011, San Francisco, CA*. Acceptance rate: unknown

46. Mao Z., Koksal C. E., and Shroff N., "Towards achieving full secrecy rate in wireless networks: a control theoretic approach," *Information Theory and Applications Workshop, ITA 2011, San Diego, CA*. Invited paper

47. Koksal C. E and Ercetin O., "Control of Wireless Networks with Secrecy," *Proceedings of Asilomar Conference on Signals, Systems and Computers, 2010, Pacific Grove, CA*. Acceptance rate: unknown

48. Mao Z., Koksal C. E., and Shroff N. B., "Resource Allocation in Sensor Networks with Renewable Energy," *Proceedings of International Conference on Computer Communication Networks, ICCCN 2010, Zurich, Switzerland*. Invited paper

49. Koyluoglu O. O., Koksal C. E., and El Gamal H., "On the Effect of Colluding Eavesdroppers on Secrecy Scaling," *Proceedings of European Wireless Conference, EW 2010, Lucca, Italy*. Acceptance rate: unknown

50. Koyluoglu O. O., Koksal C. E., and El Gamal H., "On Secrecy Capacity Scaling in Wireless Networks," *Information Theory and Applications Workshop, ITA 2010, San Diego, CA*. Invited paper

51. Gungor O., Tan J., Koksal C. E., El Gamal H., and Shroff N. B., "Joint Power and Secret Key Queue Management for Delay Limited Secure Communication," *Proceedings of IEEE INFOCOM 2010, San Diego, CA*. Acceptance rate: 17.5%

52. Sridharan O., Koksal C. E., and Uysal-Biyikoglu E., "A Greedy Link Scheduler for Wireless Networks with Gaussian Multiple Access and Broadcast Channel," *Proceedings of IEEE INFOCOM 2010, San Diego, CA*. Acceptance rate: 17.5%

53. Liu R., Sinha P., and Koksal C. E., "Joint Energy Management and Resource Allocation in Rechargeable Sensor Networks," *Proceedings of IEEE INFOCOM 2010, San Diego, CA*. Acceptance rate: 17.5%

54. Aggarwal R., Assad M., Koksal C. E., and Schniter P., "OFDMA Downlink Resource Allocation via ARQ Feedback," *Proceedings of Asilomar Conference on Signals, Systems, and Computers 2009, Pacific Grove, CA*. Acceptance rate: unknown

55. Koksal C. E., "On the Speedup Required to Achieve 100% Throughput for Multicast over Crossbar Switches," *Proceedings of IEEE International Workshop on Quality of Service, IWQoS 2008, Enschede, Holland.* Acceptance rate: (only paper (1/7) directly accepted in the short paper category)

56. Liu S, Srivastava R., Koksal C. E. and Sinha P., "Achieving Energy Efficiency with Transmission Pushbacks in Sensor Networks," *Proceedings of IEEE International Workshop on Quality of Service, IWQoS 2008, Enschede, Holland.* Acceptance rate: 35%

57. Aggarwal R., Schniter P. and Koksal C. E., "Rate Adaptation via ARQ-Feedback for Goodput Maximization over Time-Varying Channels," *Proceedings of IEEE Conference on Information Sciences and Systems, CISS 2008, Princeton, NJ.* Acceptance rate: unknown

58. Koksal C. E., Thiran P., Telatar E. and Jamieson K., "Impacts of Channel Variability on Link-Level Throughput in Wireless Networks," *Proceedings of ACM SIGMETRICS/Performance 2006, San Melo, France.* Acceptance rate: 14%

59. Koksal C. E., "Analysis of Supportable Rates in Symmetric Blocking Wavelength Routers," *Proceedings of IEEE International Symposium on Information Theory, ISIT 2006, Seattle, WA.* Acceptance rate: unknown

60. Kannan J. K., Jung J., Paxson V. and Koksal C. E., "Semi-Automated Discovery of Application Session Structure," *Proceedings of ACM Internet Measurement Conference, IMC 2006, Rio de Janeiro, Brazil.* Acceptance rate: 22%

61. Miu A., Balakrishnan H. and Koksal C. E., "Improving Loss Resilience with Multi-Radio Diversity in Wireless Networks," *Proceedings of ACM MOBICOM 2005, Cologne, Germany.* **Best paper candidate**. Acceptance rate: 10%

62. Koksal C. E., Gallager R. G. and Rohrs C., "Rate Quantization and Service Quality over Single Crossbar Switches," *Proceedings of INFOCOM 2004, Hong Kong.* Acceptance rate: 18.4%

63. Koksal C. E., "An Analysis of Blocking Switches Using Error Control Codes," *Proceedings of IEEE International Symposium on Information Theory, ISIT 2004, Chicago, IL.* Acceptance rate: unknown

64. Koksal C. E., Kassab H. and Balakrishnan H., "An Analysis of Short-Term Fairness in Wireless Media Access Protocols," *Extended Abstract - Proceedings of ACM SIGMETRICS 2000, San Jose, CA.* Acceptance rate: 17%

65. Hemenway B. R., Stevens M., Barry R., Koksal C. E. and Swanson E., "Demonstration of a Reconfigurable Wavelength Routed Network," *Post-deadline Papers, OFC 1997, Dallas, TX.* Acceptance rate: unknown

Research Grants

1. PI: Guvenc L., Co-PI: Koksal C. E., "Ford Alliance: V2X application testing and data processing by IDE"
   Agency: *Ford, Inc.*
   Amount: 300,000 USD, Jan. 2018 - Dec. 2019

2. PI: Koksal C. E., Co-PI: Shroff N. B. and Sertel K., "NeTS: Small: Enabling mobile mmWave communication: Achieving low power and delay via a hybrid RF design"
   Agency: *National Science Foundation, Division of Communications and Information Foundations*
   Amount: 402,000 USD, Sep. 2016 - Sep. 2019.

3. PI: Volakis J., Co-PI: Koksal C. E., "Secure command and control link with interference mitigation"
   Agency: *Federal Aviations Administration (FAA)*
   Amount: 625,000 USD, Jan. 2016 - Dec. 2019.

4. PI: Koksal C. E., "Beyond PKI: Enhanced Cybersecurity via MIMO"
   Agency: *Center for Automative Research*
   Amount: 40,000 USD, Jan. 2017 - Dec. 2017

5. PI: Volakis J., Co-PI: Koksal C. E., Dupaix B., and Alwan E., "Ultra wideband and secure multiuser communication system with reduced hardware"
   Agency: *Office of Naval Research (ONR)*
   Amount: 500,000 USD, Jan. 2016 - Dec. 2018.

6. PI: Koksal C. E., Co-PI: Ozguner F., "An Efficient and Secure Communication Framework for Vehicular Communication Networks"
   Agency: *Crash Imminent Safety - University Transportation Center, OSU*
   Amount: 40,000 USD, Sep. 2015 - Jun. 2016

7. PI: Koksal C. E., , Co-PI: Sun Y., "Adaptive Modulation and Coding in LTE Networks"
   Agency: *Huawei, Inc.*
   Amount: 95,000 USD, Jan. 2016 - Dec. 2016

8. PI: Koksal C. E., "Replacing Cables: Silent Multi Audio and Data Broadcasting without Wireless RF Transmissions"
   Agency: *Center for Automative Research*
   Amount: 46,000 USD, May 2016 - Dec. 2016

9. PI: Koksal C. E., Co-PI: Eryilmaz A. and Srinivasan K., "NeTS: Medium: Connecting the next billion: Rethinking wireless network design principles for the internet of everything"
   Agency: *National Science Foundation, Division of Communications and Information Foundations*
   Amount: 800,000 USD, Sep. 2015 - Sep. 2019.

10. PI: Koksal C. E., "Security of vehicular communication systems: A physical-layer approach"
    Agency: *Transportation Research Center*
    Amount: 150,000 USD, Aug. 2014 - Dec. 2017

11. PI: Koksal C. E., "Cooperative scheduling and power control in LTE networks"
    Agency: *Huawei, Inc.*
    Amount: 85,000 USD, Dec. 2013 - Dec. 2014

12. PI: Shroff N. B., Co-PI: Koksal C. E., "Enhancing the end-to-end efficiency of the mobile cloud"
    Agency: *HP Labs*
    Amount: 60,000 USD, Jun. 2015 - Jun. 2016

13. Lead-PI: Koksal C. E., Co-PIs: Shroff N. B., El Gamal H. (OSU), Lai L. (WPI), El-Fouly T. M., Khattab T. M., and Mohamed A. M. (Qatar U.), "Information Theory Enabled Secure Wireless Networking: Scaling Laws, Network Control, and Implementation"
    Agency: *Qatar National Research Fund - National Priorities Research Program*
    Amount: 1,045,000 USD (OSU portion: 276,000 USD), Aug. 2012 - Aug. 2015

14. PI: Ekici E., Co-PI: Koksal C. E., "CNIC: US-Spain Cooperation on Building Hybrid Nano-Communication Networks: RF Meets Molecules"
    Agency: *National Science Foundation*
    Amount: 23,485 USD, Aug. 2012 - Aug. 2013

15. PIs: Koksal C. E. and Ekici E., "Carbon Nano Tube - Based Communication Devices and Networks"
    Agency: *OSU Office of International Affairs International Gateway Research Grant*
    Amount: 10,000 USD, Jun. 2011 - Jun. 2012

16. PI: Shroff N. B., Co-PI: Koksal C. E., "Energy and Labor Efficient Sensor Networking for Underground Data Acquisition"
    Agency: *HP Labs - Innovation Research Program*
    Amount: 250,000 USD, Jun. 2011 - Jun. 2014

17. PI: Koksal C. E., "CAREER: Design and Control of Wireless Networks on Network-Information-Theoretic Foundations"
    Agency: *National Science Foundation*
    Amount: 400,000 USD, Jan. 2011 - Dec. 2015.

18. PI: Koksal C. E., Co-PI: Eryilmaz A., "CIF: Small: Cost and Value of Information for Resource Allocation in Wireless Networks"
    Agency: *National Science Foundation, Division of Communications and Information Foundations*
    Amount: 458,000 USD, Sep. 2009 - Sep. 2012.

19. PI: Shroff N., Co-PIs: Koksal C. E. and Sinha P., "NeTS-NECO: A New Resource Management Paradigm for Sensor Networks with Energy Replenishment"
    Agency: *National Science Foundation, Division of Computer and Network Systems*
    Amount: 500,000 USD, Aug. 2008 - Aug. 2012.

20. PI: Uysal-Biyikoglu E., Co-PI: Koksal C. E., "MIMO Networking: From Principles to Protocols"
    Agency: *National Science Foundation, Division of Communications and Information Foundations.*
    Amount: 175,000 USD, Oct. 2006 - Oct. 2010.

21. Also a member of the PI team for two different multi-university European Union (EU) FP7 Projects, titled "TACTILENet," (2015-present) and "AGILE-NET" (2009-2012). The associated funding allows non-EU partners are only supported for travels to attend annual meetings.

Academic Awards

- Best Paper, IEEE WiOpt 2018
- OSU College of Engineering Lumley Research Award, 2017
- IEEE VNC Mobile App Design Contest - Third Prize, 2016
- OSU College of Engineering Innovators Award, 2016
- Bell Labs Prize Finalist, 2014
- HP Labs - IRP Award, 2011
- OSU College of Engineering Lumley Research Award, 2011
- NSF CAREER Award, 2011
- Best Student Paper Candidate, ACM Mobicom 2005

External Activities & Service

Editorship and TPC

- Associate Editor for "IEEE Transactions on Information Theory," 2013–present
- Associate Editor for "IEEE Transactions on Wireless Communication," 2012–2016
- Associate Editor for "Elsevier Computer Networks Journal," 2012–present
- Distinguished TPC Member (performance based), IEEE INFOCOM 2016
- Technical Program Committee Chair for Wireless Communication Track for "IEEE CCNC 2015"
- Technical Program Committee (TPC) member for "IEEE INFOCOM 2008–2015," "ACM MobiHoc 2008, 2013," "IEEE ICC 2013," "IEEE BlackSeaCom 2013,", "ACM CoNext 2012," "IEEE ICCCN 2012," "IEEE GLOBECOM 2011 - Physical Layer Security Workshop," "IEEE WCNC 2009," "ACM MobiHoc 2008," "GLOBECOM 2008," "IFIP Networking" Conference, (Networking 2007), Symposium on "Next Generation Mobile Networks (NGMN 2006)."

Conference Organization

- Session organizer for " Networking with Physical Layer Security" in *Asilomar 2013*.
- Session organizer for "Physical Layer Security" in *Informs 2011 Midwestern Conference*.

Proposal Panels

- Member of Proposal Review Panels for "NSF CRI, NeTS, SaTC, and CIF" Programs (a total of > 10 times)

Reviews

- Reviewer for three books published by Cambridge University Press and a number of journals and conferences including IEEE Transactions on Information Theory, IEEE/ACM Transactions on Networking, IEEE Transactions on Signal Processing, IEEE Transactions on Wireless Communications, IEEE Transactions on Mobile Computing, IEEE Signal Processing Letters, IEEE Network Magazine, IEEE Transactions on Parallel and Distributed Computing, Telecommunication Systems, Elsevier Computer Networks Journal, Elsevier Transportation Research Journal, INFOCOM, MOBICOM and ISIT.
- Reviewer of proposals for NSF and ARO (multiple times).

Internal Activities & Service

- **Department:**
  - *Chair* Graduate Admissions Committee (2016-2017), Networking Area (2010-2011)
  - *Member* Personnel Committee (2017), Graduate Studies Committee (2011-present), Curriculum Committee (2010-2011), Computing Infrastructure Committee, Recruiting and Financial Aid Committee (2006-2011), Computer Facilities (RCC) Committee (2008-2010), Distinguished Seminars Committee Member (2006-2007).
- **College and University:** Technical Team member of "Growing the R in TRC" committee - responsible for cybersecurity (2016-2017), Member of the university-wide personnel committee for the Discovery-Theme, cybersecurity faculty hire.