

Yasin Yilmaz

CONTACT INFORMATION

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RESEARCH INTERESTS

Big data analytics, Cybersecurity, Machine learning, Statistical signal processing, IoT

EDUCATIONAL BACKGROUND

- Ph.D. in Electrical Engineering** (August 2014),
Columbia University, New York, NY, USA
Advisor: [Prof. Xiaodong Wang](#)
Co-Advisor: [Prof. George V. Moustakides](#)
Thesis: “Sequential Statistical Signal Processing with Applications to Distributed Systems”
- M.Sc. in Electrical and Computer Engineering** (June 2010),
Koc University, Istanbul, TURKEY
Advisor: [Prof. S. Serdar Kozat](#)
Thesis: “New Adaptive Algorithms for Linear Filtering and Nonlinear Prediction”
- B.Sc. in Electrical and Electronics Engineering** (June 2008),
Middle East Technical University, Ankara, TURKEY

PROFESSIONAL EXPERIENCE

- Assistant Professor**, University of South Florida (2016-)
Postdoctoral Research Fellow, University of Michigan (2014-2016)
Graduate Assistant, Columbia University (2010-2014)
Graduate Assistant, Koc University, Istanbul, Turkey (2008-2010)

AWARDS & RECOGNITIONS

- SCEE Research Initiation Award (2017)
- Affiliated Faculty, Florida Center for Cybersecurity (2016)
- Collaborative Research Award, Electrical Engineering Department, Columbia University (2015)
- Postdoctoral Fellow, Consortium for Verification Technology, University of Michigan (2014)

RESEARCH GRANTS

- NSF SCC 1737598, Y. Yilmaz (PI), A. Bush, M. Hafen, “SCC-Planning: Agent-Based Scenario Planning for a Smart & Connected Community Against Sea Level Rise in Tampa Bay”, (\$100,000), 9/17-8/18
- SCEE Research Initiation Grant 17-03, Y. Yilmaz (PI), “Online Nonparametric Cyber-Attack Detection”, (\$50,000 with cost sharing), 7/17-6/18

THESES SUPERVISED

- Salman Sadiq Shuvo, PhD, “Reinforcement Learning for Cyber-Physical Systems”, 1/2018- , USF
- Almuthanna Nassar, PhD, “Sequential Analysis for IoT Networks”, 8/2017- , USF
- Mahsa Mozaffari, PhD, “Online Nonparametric Anomaly Detection for High-Dimensional Systems”, 8/2017- , USF
- Keval Doshi, MS, “Statistical Detection of Low-Rate Cyber-Attacks in IoT Networks”, 8/2017- , USF
- Ammar Haydari, MS, “Statistical Detection of DDoS Attacks in Intelligent Transportation Systems”, 8/2017- , USF

- Mehmet Necip Kurt, PhD, “Statistical Signal Processing with Applications to Cyber-Physical Systems”, 9/2016- , Columbia University (co-advisor)

PUBLICATIONS

Book Chapter

- (B1) Y. Yilmaz, G. Moustakides, X. Wang and A. Hero, “Event-Based Statistical Signal Processing”, *Event-Based Control and Signal Processing*, CRC Press: Boca Raton, FL, USA, Dec. 2015

Patent

- (P1) Y. Yilmaz, G. Moustakides and X. Wang, ”Methods, systems, and media for determining whether a signal of interest is present”, US9479372 B2, Oct 25, 2016

Journal Papers

- (J15) Y. Yilmaz, M. Kurt and X. Wang, “Distributed Dynamic State Estimation and LQG Control in Resource-Constrained Networks”, *to appear, IEEE Transactions on Signal and Information Processing over Networks*
- (J14) M. Kurt, Y. Yilmaz and X. Wang, “Distributed Quickest Detection of Cyber-Attacks in Smart Grid”, *to appear, IEEE Transactions on Information Forensics and Security*
- (J13) Y. Yilmaz and A. Hero, “Multimodal Event Detection in Twitter Hashtag Networks”, *Journal of Signal Processing Systems*, 2016, DOI 10.1007/s11265-016-1151-4
- (J12) Y. Yilmaz, S. Li and X. Wang, “Sequential Joint Detection and Estimation: Optimum Tests and Applications”, *IEEE Transactions on Signal Processing*, vol. 64, no. 20, pp. 5311-5326, Oct. 2016
- (J11) Z. Guo, Y. Yilmaz and X. Wang, “Transmitter-Centric Channel Estimation and Low-PAPR Precoding for Millimeter-Wave MIMO Systems”, *IEEE Transactions on Communications*, vol. 64, no. 7, pp. 2925-2938, July 2016
- (J10) Y. Yilmaz, G. Moustakides and X. Wang, “Sequential and Decentralized Estimation of Linear Regression Parameters in Wireless Sensor Networks”, *IEEE Transactions on Aerospace and Electronic Systems*, vol. 52, no. 1, pp. 288-306, Feb. 2016
- (J9) S. Li, Y. Yilmaz and X. Wang, “Quickest Detection of False Data Injection Attack in Wide-Area Smart Grids”, *IEEE Transactions on Smart Grid*, vol. 6, no. 6, pp. 2725-2735, Nov. 2015.
- (J8) M. Sayin, Y. Yilmaz, A. Demir and S. Kozat, “The Krylov-proportionate normalized least mean fourth approach: Formulation and performance analysis”, *Signal Processing*, vol. 109, pp. 1-13, Apr. 2015.
- (J7) Y. Yilmaz, G. Moustakides and X. Wang, “Sequential Joint Detection and Estimation”, *SIAM Theory of Probability and Its Applications*, vol. 59, no. 3, pp. 452-465, 2015 (also in *Teor. Veroyatnost. i Primenen.*, vol. 59, no. 3, pp. 562-578, 2014)
- (J6) Y. Yilmaz, Z. Guo and X. Wang, “Sequential Joint Spectrum Sensing and Channel Estimation for Dynamic Spectrum Access”, *IEEE Journal on Selected Areas in Communications*, vol. 32, no. 11, pp. 2000 - 2012, Nov. 2014
- (J5) Y. Yilmaz and X. Wang, “Sequential Distributed Detection in Energy-Constrained Wireless Sensor Networks”, *IEEE Transactions on Signal Processing*, vol. 62, no. 12, pp. 3180-3193, June 2014.
- (J4) Y. Yilmaz and X. Wang, “Sequential Decentralized Parameter Estimation under Randomly Observed Fisher Information”, *IEEE Transactions on Information Theory*, vol. 60, no. 2, pp. 1281-1300, Feb. 2014.

- (J3) Y. Yilmaz, G. Moustakides and X. Wang, “Channel-aware Decentralized Detection via Level-triggered Sampling”, *IEEE Transactions on Signal Processing*, vol. 61, no. 2, pp. 300-315, Jan. 2013.
- (J2) Y. Yilmaz, G. Moustakides and X. Wang, “Cooperative Sequential Spectrum Sensing Based on Level-triggered Sampling”, *IEEE Transactions on Signal Processing*, vol. 60, no. 9, pp. 4509-4524, Sep. 2012.
- (J1) Y. Yilmaz and S. Kozat, “Competitive Nonlinear Randomized Prediction under Additive Noise”, *IEEE Signal Processing Letters*, vol. 17, no. 4, pp. 335-339, Apr. 2010

Journal Papers - submitted

- E. Hou, Y. Yilmaz and A. Hero, “Sparse Network Tomography for Anomaly Detection”, submitted, *IEEE Transactions on Signal Processing*
- H. Ali, S. Liu, Y. Yilmaz, A. Hero and R. Couillet, “Inference of Shared and Non-shared Communities from Bidimensional Networks”, submitted, *ICML*

Journal Papers - in progress

- Y. Yilmaz and A. Hero, “Unsupervised Feature Learning in Large Heterogeneous Datasets via Multimodal Factor Analysis”, to be submitted, *IEEE Transactions on Neural Networks and Learning Systems*
- M. Kurt, Y. Yilmaz and X. Wang, “Defending Combined Attacks and Stealth Attacks against Smart Grid”, to be submitted, *IEEE Transactions on Smart Grid*
- M. Mozaffari and Y. Yilmaz, “Online Nonparametric Anomaly Detection in High-Dimensional Systems”, to be submitted, *IEEE Transactions on Signal Processing*
- K. Doshi, Y. Yilmaz and S. Uludag, “Quickest Detection of IoT-based DDoS Attacks in Smart Grid”, to be submitted, *IEEE Transactions on Information Forensics and Security*
- A. Nassar and Y. Yilmaz, “Sequential Scheduling in Fog RAN”, to be submitted, *IEEE Internet of Things Journal*
- A. Haydari and Y. Yilmaz, “Quickest Detection of Low-Rate DDoS Attacks in Intelligent Transportation Systems”, to be submitted, *IEEE Transactions on Intelligent Transportation Systems*

Conference Papers & Invited Talks

- (I13) “Nonparametric Sequential Change Detection for High-Dimensional Problems”, *Allerton Conference on Communication, Control, and Computing, 2017*, invited
- (C12) Y. Yilmaz and S. Uludag, “Mitigating IoT-based Cyberattacks on the Smart Grid”, *IEEE International Conference on Machine Learning and Applications (ICMLA), 2017*
- (C11) Y. Yilmaz, “Online Nonparametric Anomaly Detection based on Geometric Entropy Minimization”, *IEEE International Symposium on Information Theory (ISIT), 2017*
- (I12) Y. Yilmaz, S. Uludag and E. Dilek, “A Preliminary Work on Predicting Travel Times and Optimal Routes Using Istanbul’s Real Traffic Data”, *Transist 2016, 9th Istanbul Transport Congress and Exhibition, Dec. 2016*, invited
- (I11) “Multi-modal Factor Analysis: Unsupervised Feature Learning in Heterogeneous Big Datasets”, *Information Theory and Applications Workshop, Feb. 2016*, invited

- (I10) “Data-Driven Statistical Inference in Intelligent Systems”, *University of North Texas, Mar. 2016*, invited
- (I9) “Multimodal Data Fusion and Online Statistical Inference”, *Schlumberger-Doll Research Center, Cambridge, MA, Mar. 2016*, invited
- (I8) “Data-Driven Statistical Inference in Intelligent Systems”, *University of California, Riverside, Feb. 2016*, invited
- (C10) E. Hou, Y. Yilmaz and A. Hero, “Diversion Detection in Partially Observed Nuclear Fuel Cycle Networks”, *ANS Advances in Nuclear Nonproliferation Technology and Policy Conference, 2016*
- (C9) Y. Yilmaz, E. Hou and A. Hero, “Online Diversion Detection in Nuclear Fuel Cycles via Multimodal Observations”, *ANS Advances in Nuclear Nonproliferation Technology and Policy Conference, 2016*
- (C8) S. Li, Y. Yilmaz and X. Wang, “Sequential Cyber-Attack Detection in the Large-Scale Smart Grid System”, *IEEE International Conference on Smart Grid Communications, 2015*
- (I7) Y. Yilmaz, E. Hou, T. Banerjee and A. Hero, “Quickest Change Detection in Nuclear Fuel Cycles”, *Consortium for Verification Technology Workshop, 2015*, invited
- (I6) E. Hou, T. Van, Y. Yilmaz and A. Hero, “Anomaly Detection in Nuclear Fuel Cycle Networks”, *National Nuclear Security Administration UITI Meeting, 2015*, invited
- (I5) Y. Yilmaz, G. Moustakides, S. Li, X. Wang and A. Hero, “Sequential Joint Detection and Estimation: Optimum Tests and Applications”, *International Workshop on Sequential Methodologies, 2015*, invited
- (C7) Y. Yilmaz and A. Hero, “Multimodal Factor Analysis”, *IEEE International Workshop on Machine Learning for Signal Processing, Sep. 2015*
- (I4) “Online Statistical Methods for Cyber-physical Systems”, *invited talk, King Abdullah University of Science and Technology, Thuwal, KSA, March 24 2014*, invited
- (I3) Y. Yilmaz, G.V. Moustakides and X. Wang, “Optimum Sequential Joint Detection and Estimation”, *invited, International Workshop on Sequential Methodologies, 2013*, invited
- (C6) Y. Yilmaz, G.V. Moustakides and X. Wang, “Optimal Sequential Parameter Estimation”, *IEEE International Symposium on Information Theory (ISIT), 2013*
- (C5) Y. Yilmaz and X. Wang, “Asymptotically Optimal and Bandwidth-efficient Decentralized Detection”, *IEEE International Symposium on Information Theory (ISIT), 2013*
- (C4) Y. Yilmaz, G. Moustakides and X. Wang, “Sequential Decentralized Detection under Noisy Channels”, *Allerton Conference on Communication, Control, and Computing, 2012*
- (I2) Y. Yilmaz, G. Moustakides and X. Wang, “Adaptive Spectrum Sensing for Agile Cognitive Radios”, *invited, Cognitive Radio Summit 2012*, invited
- (I1) Y. Yilmaz, G. Moustakides and X. Wang, “Collaborative Spectrum Sensing based on Event-driven Sampling”, *invited, Information Theory and Applications Workshop 2012*, invited
- (C3) Y. Yilmaz, G. Moustakides and X. Wang, “Spectrum Sensing via Event-triggered Sampling”, *Asilomar Conference on Signals, Systems and Computers, 2011*

- (C2) Y. Yilmaz and S. Kozat, “Toplanir Gurultu Altinda Yarismaci Dogrusal Olmayan Ongoru”, *IEEE SIU 2010*
- (C1) Y. Yilmaz and S. Kozat, “An Extended Version of the NLMF Algorithm Based on Proportionate Krylov Subspace Projections”, *IEEE International Conference on Machine Learning and Applications (ICMLA) 2009*

TEACHING

- Data Analytics, Spring 2018, Spring 2017 (USF)
- Advanced Data Analytics, Fall 2017 (USF)
- Teaching Assistant: Signals and Systems, Communication Systems, Detection and Estimation Theory, Information Theory, Sparse Signal Modeling (Columbia University)

TECHNICAL
ACTIVITIES

- Vice Chair, Special Interest Group on AI Embedded Cognitive Networks, Technical Committee on Cognitive Networks, IEEE Communications Society
- Guest Editor, Special Issue on Machine Learning and Artificial Intelligence for Cognitive Internet of Things, IEEE Internet of Things Journal
- Guest Editor, Special Issue on Machine Intelligence and Cyber Security for Cognitive Internet of Things, Wireless Communications and Mobile Computing
- Panelist, NSF Computing and Communication Foundations (CCF): Core Programs, 2018
- Panelist, NSF Secure and Trustworthy Cyberspace (SaTC), 2017
- Program Committee Member for *International Symposium on Personal, Indoor, and Mobile Radio Communications (PIMRC) 2018*, *IEEE International Wireless Communications & Mobile Computing Conference: Workshop on Data Analytics for Cyber Security 2018*, *IEEE International Workshop on Machine Learning for Signal Processing 2015*, *IEEE Global Conference on Signal and Information Processing 2015*
- Reviewer for *IEEE Transactions on Signal Processing*, *IEEE Transactions on Information Theory*, *IEEE Transactions on Communications*, *IEEE Transactions on Signal and Information Processing over Networks*, *IEEE Transactions on Information Forensics and Security*, *IEEE Transactions on Network and Service Management*, *IEEE/ACM Transactions on Networking*, *IEEE Journal on Selected Areas in Communications*, *IEEE Signal Processing Letters*, *IEEE Wireless Communications Letters*, *IEEE Communications Letters*, *Signal Processing*, *NIPS*, *ISIT*, *ICC*, *Globecom*, *ICASSP*
- IEEE Member

OTHER
RECOGNITIONS

- Valedictorian (GPA 4.0), Koc University (2010)
- Ranked 58th among 132,000 students in Turkey (0.04%) in the Academic staff and graduate level education exam (2007)
- Ranked 117th among 1.5 million students in Turkey (0.01%) in the University entrance exam (2003)

UNIVERSITY
SERVICE

- Member, Student Success Committee, Electrical Engineering, USF