ALI CAFER GURBUZ

Assistant Professor
Director of Information Processing and Sensing Lab
Department of Electrical and Computer Engineering
Mississippi State University
406 Hardy Rd., Mississippi State, MS 39762

Office: +1-662-325-1530
Fax: +1-662-325-2298
E-mail: gurbuz@ece.msstate.edu
Web: https://www.alicafergurbuz.org/

Summary of Qualifications

- **Ph.D.**: Electrical and Computer Engineering from the Georgia Institute of Technology, Aug. 2008
- **Experience:** 10+ years of (post Ph.D.) research and teaching experience in signal processing and machine learning with applications to radar, communications and remote sensing.
- **CAREER**: NSF CAREER Award from ECCS program starting 2021.
- **Publications:** 140+ technical publications, including 50 peer-reviewed journals, 2 book chapters, 90 peer-reviewed conferences and 38 other publications, and 2 patents.
    - Total citation: 3165, h-index = 25 & i-10 = 62
    - *Since joining MSU:* 29 journals, 2 book chapters, 41 conferences, and 1 patents
- **Grants:** 20 awarded external research grants (9 as PI/7 as co-PI) with a total value of over $11 Million; ~$3.2 Million to self from major agencies; NSF (5 including CAREER); DOD (4), including AFRL and ERDC; NOAA, USDA.
    - *Since joining MSU:* Above stated amount is all after joining MSU
- **Graduate Student Advising:** 1 PhD and 12 M.S. (thesis) graduated as major professor. Currently advising 7 PhD students and 1 MS student as major professor.
    - *Since joining MSU:* 1 PhD and 5 M.S. (thesis) graduated as major professor
- **Teaching:** At MSU I taught ECE core undergraduate classes: 1) Signals and Systems, 2) Electromagnetics 1, Developed and opened new split level (senior/graduate) elective Mathematical Foundations of Machine learning. Offered graduate level courses such as Statistical Signal Processing, Introduction to Radar. Instructor score (averaged over classes) of 4.2.
- **Service:** Senior Member of the IEEE, MSU ECE Undergraduate Committee Member, Elected Member, IEEE Computational Imaging Technical Committee, Associate and Guest Editors for several journals, Panelist for several NSF panels

Research Interests

- Signal Processing & Wireless Communications
    - Sparse Signal processing, Compressive Sensing
    - Computational Imaging (Synthetic Aperture Radar, Ground Penetrating Radars)
    - Communication and Passive/Active Sensing Coexistence
    - Integrated Communication and Sensing, Cognitive sensing systems
    - Cyber Physical Systems, Off-road autonomy

- Machine Learning
    - ML for Radar, Remote Sensing and Wireless Communications
    - Deep learning for inverse problems & computational imaging
    - Physics aware machine learning for radar, autonomy and remote sensing
    - Compressed learning, Learning to sense
    - Interpretable learning architectures

- Radar & Remote Sensing
    - Radar/Array Signal Processing/Beamforming
    - Time-Frequency Domain Analysis
    - UAS/Satellite based remote sensing
    - Passive radars, Signals of Opportunity (GNSS+R), Sensing with Software Defined Radios
    - UAV based remote sensing & Precision agriculture

Executive Research Summary

Publications: Total citation: 3165 h-index = 25 & i-10 = 60 [Google Scholar]

	Book Chapters	Journals	Peer-reviewed Conferences	Other Publications (Abstracts, Non-English)	Patents/IP
@MSU (2018-)	2	27	41	8	2
Total	2	48	87	38	3

Graduate Student Advising:

	PhD Students Graduated	PhD Students Current	MS (thesis) Graduated	MS (thesis) Current	MS (non-thesis) Graduated
@MSU (2018-)	1	7	6	1	2
Total	1	7	13	1	2

Grants: External Competitive Awarded Grants as PI and Co-PI

@MSU (2018-)	#	NSF	DoD	NOAA	Other	# PI	# Co-PI	Total ($)	My Share ($)
Currently Active	10	4	4	1	1	5	5	$4,859,000	$2,309,000
Completed	6	2	2	-	2	4	2	$926,000	$456,000
Total	16	6	6	1	3	9	7	$5,785,000	$2,765,000

At MSU, I have also participated in 4 projects as Investigator (I) where my share was ~ $472,000.

Prior to MSU: I have been supported from European and Turkish funding agencies and companies for a total funding of approximately $400,000 for my share.

Education

- **Georgia Institute of Technology** ~ Atlanta, GA, USA . . . . . (08/2008)
  PhD in Electrical and Computer Engineering,
  Dissertation: Feature Detection Algorithms in Computed Images
  Advisor: Prof. James H. McClellan

- **Georgia Institute of Technology** ~ Atlanta, GA, USA . . . . . (12/2005)
  MS in Electrical and Computer Engineering,

- **Bilkent University** ~ Ankara, Turkey . . . . . (06/2003)
  BS in Electrical and Electronics Engineering

Professional Experience

- **Mississippi State University, Starkville, MS**
  Assistant Professor . . . . . (07/2018–present)
  Department of Electrical and Computer Engineering
  Co-director of Information Processing and Sensing Lab

- **University of Alabama, Tuscaloosa, AL**
  Research Assistant Professor . . . . . (08/2017–04/2018)
  Department of Electrical and Computer Engineering

- **TOBB University of Economics and Technology, Ankara, Turkey**
  Associate Professor . . . . . .(04/2013–08/2016)
  Assistant Professor . . . . . (02/2009–04/2013)
  Department of Electrical and Electronics Engineering

- **Georgia Institute of Technology, Atlanta, GA**
  Post-Doctoral Research Fellow . . . . . (08/2008–01/2009)
  Research Assistant . . . . . (08/2003–08/2008)

Sponsored Research Projects and Grants

Summary of Research Grants:

In MSU (2018-present) , I have been participated in 20 externally awarded grants. In 20 awarded, I was PI in 9, co-PI in 7 and senior personnel (I) in 4. The total amount of all projects are above $11 Million. The total amount of the proposals awarded as PI/Co-PI is $5,785,629 with my share of $2,765,751. With the projects I was an I, my share of external grants is over $3.2 Million. These grants are funded from agencies such as the National Science Foundation (NSF), the Department of Defense (DoD), the United States Department of Agriculture (USDA), and National Oceanic and Atmospheric Administration (NOAA). I have also been awarded the prestigious **NSF CAREER Grant in 2021**.

External Grants at MSU:

#	Sponsor	Title	Period	Total Awarded	My Share (~)	Pos
Current Awards:						
1	NSF - CNS	Collaborative Research: SWIFT-SAT: INtegrated Testbed Ensuring Resilient Active/Passive CoexisTence (INTERACT): End-to-End Learning-Based Interference Mitigation for Radiometers	01/24-12/26	$500,000	$300,000	PI
2	NSF-ECCS	CAREER: Learning to Sense: Joint Learning of Task Oriented Cognitive Sensing with Data Driven Reconstruction and Inference	03/21-03/26	$500,000	$500,000	PI
3	NSF-CNS	Collaborative Research: SWIFT: LARGE: AI-Enabled Spectrum Coexistence between Active Communications and Passive Radio Services: Fundamentals, Testbed and Data	10/20-9/24	$500,000	$150,000	Co-PI
4	NSF-ECCS	MRI: Acquisition of Biomechanical Movement Baselining Technology Suite for Wearable Technology and Stretch Sensor-based Validation of Lower Body Characteristics	09/22-08/24	$539,000	$64,680	Co-PI
5	MS Corn Board	UAV-based autonomous unsupervised weed detection for corn fields	01/23-12/24	$115,730	$28,933	Co-PI
6	USDA-ARS	Advanced autonomy, precision agriculture and artificial intelligence for dynamic, robust and resilient cropping systems	07/23-07/24	$831,892	$56,926	I
7	ERDC	Sensor Fusion Based Remote Sensing for National Disaster Damage Assessment (Military Engineering Task 2)	05/21-12/23	$238,105	$119,053	PI
8	ERDC	Multi-Sensor Analytics and Sensor Fusion for Cross Country Mobility Assessment (Military Engineering Task 1)	05/21-12/23	$534,641	$106,928	Co-PI
9	DOD	Detecting Biological and Chemical Threats in Complex Subterranean Environments	10/21-9/24	$1,525,734	$762,867	PI
10	AFRL	Interpretable Complex Sinc-Nets for RF Waveform Detection and Classification in Time-Frequency Domain with Software Defined Radio Implementation	05/23-08/25	$147,787	$147,787	PI
11	NOAA	Machine Learning Based Automated Detection of See Floor Gas Seeps	09/22-08/24	$258,314	$129,157	Co-PI

Completed Awards:						
12	USDA-ARS	Advancement of UAS/UAV Application Systems	09/19-09/23	$3,452,369	$246,000	I
13	NSF - CPS	CPS: Small: Collaborative Research: RF Sensing for Sign Language Driven Smart Environments	10/19-09/22	$133,002	$133,002	PI
14	NSF	REU Supplement Request	01/22-12/22	$16,000	$4,000	Co-PI
15	USDA-NACA	Advancing Agricultural Research through High Performance Computing (Bee project)	06/21-06/22	$78,786	$39,393	Co-PI
16	ERDC	Multi-Sensor Analytics for Suburban and Rural Mobility Assessment	09/19-03/22	$298,128	$119,251	PI
17	ERDC	SiMBRS II TO002- Advanced Modeling and Simulation of Multi-Physics Material Response in Geoenvironments-Topic 6	09/18–05/22	$2,914,626	$145,731	I
18	DoD	UAS-Based Site Characterization	10/18–03 /20	$399,502	$159,801	PI
19	MS NASA	MS NASA EPSCoR RID Travel Grant	03/19-04/19	$900	$900	PI
20	Clarkson /AFRL	Robust EW Processing UAV Multi-Agent Coordination	04/18-02/19	$125,000	$25,000	I

* For the projects I was Investigator (I) (no IAS), my share is computed approximately from budget I have spent.

Other Grants at MSU (Internal) [Total: $3.9K| Share: $3.9K]:

1. MSU Bagley Collage of Engineering, Undergraduate Research Funding, Benjamin Bartlett, $2500, Fall 2019-Spring 2020
2. MSU Honors Summer Undergraduate Research Fellowhip, 'Autonomous Vehicle Ability Assessment for Obstacles in Complex Terrains Through Sensor Fusion", (student W. Peyton Johnson), Summer 2019 $1,448

External Grants Prior to MSU: [My Share total ~ $400K]

1. Role: Principal Investigator (PI), Title: "Compressive sensing based solutions for off the grid target problem", Sponsor: Turkish Scientific and Technological Research Council (TUBITAK) Scientific and Technological Research Projects Funding Program 1001 Grant No 113E515, Duration: 2014-2016, Budget: 182,020 TL (Turkish Liras), - Share 100%
2. Role: Principal Investigator (PI), Title: "Compressive Data Acquisition and Processing Techniques for Sensing Applications," Sponsor: EU Marie Curie International Reintegration Grant, Agreement No PIRG04-GA-2008-239506, Duration: 2010-2013, Budget: 75,000€ (Euro), - Share 100%
3. Role: Co-PI, Title: "Automatic Target Classification Algorithms," Sponsor: ASELSAN Company, Duration: 2014-2016, Budget: 135,000 TL (Turkish Liras), with S. Gurbuz (PI), - Share 50%
4. Role: Principal Investigator (PI), Title: "Compressive Sensing Based Energy Efficient Communications for Wireless Sensor Networks", Sponsor: Turkish Telecom Company, Budget: 60,000 TL (Turkish Liras), Duration: 2013-2014, - Share 100%
5. Role: Principal Investigator (PI), Title: "SAR Imaging using convex optimization techniques", Sponsor: ASELSAN Company, Budget: 70,000 TL (Turkish Liras), Duration: 2014-2015, - Share 100%
6. Role: Principal Investigator (PI), Title: "Subsurface Imaging Radar Prototype Development", Turkish Ministry of Science and Technology, Techno- Entrepreneurship Grant, Budget: : 100,000 TL (Turkish Liras), Duration: 2011-2012 – Share 100%
7. Role: Principal Investigator (PI), Title: "Compressive Remote Sensing and Imaging," Sponsor: Turkish Scientific and Technological Research Council (TUBITAK) Career Grant No. 109E280, Duration: 2010 – 2013, Budget: 90,173 TL (Turkish Liras) – Share 100%

Publications

To date I have a total of **50 published peer reviewed journal articles** and **87 peer reviewed conference publications**. I have **3 patent/provisional patents, and 2 book chapters**. From these publications, 29 journal, 41 conference publications, 2 book chapters and 1 patent and 1 IP have been published while I have been at MSU. Publications prior to MSU have been seperated in each category and works with advisees (students/postdocs) are indicated with their names being underlined.

	Book Chapters	Journals	Peer-reviewed Conferences	Other Publications (Abstracts, Non-English)	Patents/IP
@MSU (2018-)	2	29	41	8	2
Total	2	50	87	38	3

BOOK CHAPTERS

1. S. Z. Gurbuz, S. Bruggenwirth, T. Reininger, **A. C. Gurbuz**, and G.E. Smith, "The Role of Neural Networks in Cognitive Radar," in Next Generation Cognitive Radar Systems, edited by K.V. Mishra, B.V. Shankar and M. Rangaswamy, IET, ISBN: 1839534745, Publication Date: Dec 1, 2023

2. **A. C. Gurbuz** and F. Ahmad, "Basic Principles of Machine Learning," in Deep Neural Network Design for Radar Applications, edited by S. Gurbuz, IET Press, December 2020. ISBN: 9781785618529

PEER REVIEWED JOURNAL ARTICLES

Under review:

1. A.M. Alam, M. Kurum, M. Ogut, A.C. Gurbuz, "Microwave Radiometer Calibration Using Deep Learning with Reduced Reference Information and Two-Dimensional Spectral Features", under review in IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing (JSTARS), 2023
2. G. King, A. Towfiq, **A. C. Gurbuz**, B. Cetiner, "Beam Coefficient Prediction for Antenna Arrays Using Physics-Aware Convolutional Neural Networks", IEEE Transactions on Antennas and Propagation, 2023.
3. M. M. Farhad, S. Biswas, A.M. Alam, M. A. S. Rafi, A. C. Gurbuz, M. Kurum, "SDR-Based Dual Polarized L-Band Microwave Radiometer Operating from Small UAS Platforms", under review in IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing (JSTARS), 2023

Published (reverse chronology):

1. C. O. Ayna, R. Mdrafi, Qian Du, and **A. C. Gurbuz**. "Learning-Based Optimization of Hyperspectral Band Selection for Classification" *Remote Sensing* 15, no. 18: 4460 2023. https://doi.org/10.3390/rs15184460
2. S. Biswas, C. O. Ayna, S. Z. Gurbuz and **A. C. Gurbuz**, "CV-SincNet: Learning Complex Sinc Filters From Raw Radar Data for Computationally Efficient Human Motion Recognition," in *IEEE Transactions on Radar Systems*, vol. 1, pp. 493-504, 2023, doi: 10.1109/TRS.2023.3310894.
3. M. M. Farhad, M. Kurum and **A. C. Gurbuz**, "A Ubiquitous GNSS-R Methodology to Estimate Surface Reflectivity Using Spinning Smartphone Onboard a Small UAS," in *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, vol. 16, pp. 6568-6578, 2023, doi: 10.1109/JSTARS.2023.3294833.
4. M. M. Nabi, V. Senyurek, F. Lei, M. Kurum and **A. C. Gurbuz**, "Quasi-Global Assessment of Deep Learning-Based CYGNSS Soil Moisture Retrieval," in *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, vol. 16, pp. 5629-5644, 2023, doi: 10.1109/JSTARS.2023.3287591.
5. E. Kurtoglu, S. Biswas, **A. C. Gurbuz**, and S.Z. Gurbuz, "Boosting multi-target recognition performance with multi-input multi-output radar-based angular subspace projection and multi-view deep neural network", *IET Radar Sonar Navigation* 17(7), 1115–1128, 2023. https://doi.org/10.1049/rsn2.12405

6. S. Davarzani, D. Saucier, P. Talegaonkar, E. Parker, A. Turner, C. Middleton, W. Carroll, J. E. Ball, **A. C. Gurbuz**, Harish Chander, Reuben F. Burch V, Brian K. Smith, Adam Knight, and Charles Freeman "Closing the Wearable Gap: Foot–ankle kinematic modeling via deep learning models based on a smart sock wearable". *Wearable Technologies*, 4, E4, 2023. doi:10.1017/wtc.2023.3

7. A. M. Alam, M. Kurum and **A. C. Gurbuz**, "Radio Frequency Interference Detection for SMAP Radiometer Using Convolutional Neural Networks," in *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, vol. 15, pp. 10099-10112, 2022, doi: 10.1109/JSTARS.2022.3223198.

8. M. M. Nabi, V. Senyurek, **A. C. Gurbuz** and M. Kurum, "Deep Learning-Based Soil Moisture Retrieval in CONUS Using CYGNSS Delay–Doppler Maps," in *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, vol. 15, pp. 6867-6881, 2022, doi: 10.1109/JSTARS.2022.3196658.

9. V. Senyurek, M. M. Farhad, **A. C. Gurbuz**, M. Kurum and A. Adeli, "Fusion of Reflected GPS Signals With Multispectral Imagery to Estimate Soil Moisture at Subfield Scale From Small UAS Platforms," in *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, vol. 15, pp. 6843-6855, 2022, doi: 10.1109/JSTARS.2022.3197794.

10. F. Lei, V. Senyurek, M. Kurum, **A. Gurbuz**, D. R. Boyd, R. Moorhead, W.T. Crow, and O. Eroglu "A Quasi-Global Machine Learning-based Soil Moisture at High Spatio-Temporal Scales using CYGNSS and SMAP Observations," *Remote Sensing of Environment*, Volume 276, July 2022, 113041. doi.org/10.1016/j.rse.2022.113041.

11. E. Kurtoglu, **A. C. Gurbuz**, E. A. Malaia, D. Griffin, C. Crawford and S. Z. Gurbuz, "ASL Trigger Recognition in Mixed Activity/Signing Sequences for RF Sensor-Based User Interfaces," in *IEEE Transactions on Human-Machine Systems*, vol. 52, no. 4, pp. 699-712, Aug. 2022, doi: 10.1109/THMS.2021.3131675.

12. M. M. Rahman, E. A. Malaia, **A. C. Gurbuz**, D. J. Griffin, C. Crawford and S. Z. Gurbuz, "Effect of Kinematics and Fluency in Adversarial Synthetic Data Generation for ASL Recognition With RF Sensors," in *IEEE Transactions on Aerospace and Electronic Systems*, vol. 58, no. 4, pp. 2732-2745, Aug. 2022, doi: 10.1109/TAES.2021.3139848.

13. E.A. Malaia, J.D. Borneman, E. Kurtoglu, S.Z. Gurbuz, D. Griffin, C. Crawford and **A. C. Gurbuz**, "Complexity in Sign Languages: Linguistic and Dimensional Analysis of Information Transfer in Dynamic Visual Communication," *Linguistic Vanguard*, 2022, DOI: 10.1515/lingvan-2021-0005

14. V. Senyurek, **A. C. Gurbuz,** M. Kurum "Assessment of Interpolation Errors of CYGNSS Soil Moisture Estimations," in *IEEE Journal of Selected Topics in Applied Earth Observation and Remote Sensing*, vol. 14, pp. 9815 - 9825, 2021. doi:10.1109/JSTARS.2021.3113565

15. S. Z. Gurbuz, M. Mahbubur Rahman; E. Kurtoglu**, A, C. Gurbuz**; Evie A. Malaia; Darrin J. Griffin; Chris Crawford; "Multi-Frequency RF Sensor Fusion for Word-Level Fluent ASL Recognition," in *IEEE Sensors Journal*, vol. 22, no. 12, pp. 11373-11381, 15 June15, 2022, doi: 10.1109/JSEN.2021.3078339.

16. J. Rogers, J. E. Ball, , **A. C. Gurbuz,** , "Robust estimation of the number of coherent radar signal sources using deep learning", *IET Radar, Sonar & Navigation*, Vol 15, No 5, pp. 431-440, 2021. doi.org/10.1049/rsn2.12047

17. S. Z. Gurbuz, **A. C. Gurbuz**; E. A. Malaia; D. J. Griffin; C. Crawford; M. M. Rahman; E. Kurtoglu, R. Aksu, T. Macks, R. Mdrafi, "American Sign Language Recognition Using RF Sensing," in *IEEE Sensors Journal*, vol. 21, no. 3, pp. 3763-3775, 1 Feb.1, 2021, doi: 10.1109/JSEN.2020.3022376.

18. M. Kurum, M. M. Farhad and **A. C. Gurbuz**, "Integration of Smartphones into Small Unmanned Aircraft Systems to Sense Water in Soil by Using Reflected GPS Signals," in *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, vol. 14, pp. 1048-1059, 2021, doi: 10.1109/JSTARS.2020.3041162.

19. R. Mdrafi, Q. Du, **A. C. Gurbuz**, B. Tang, L. Ma and N. H. Younan, "Attention-Based Domain Adaptation Using Residual Network for Hyperspectral Image Classification," in *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, vol. 13, pp. 6424-6433, 2020, doi: 10.1109/JSTARS.2020.3035382.

20. V. Senyurek, F. Lei, D. Boyd, **A.C**. **Gurbuz**; M. Kurum, R. Moorhead, "Evaluations of a Machine Learning-based CYGNSS Soil Moisture Estimates against SMAP Observations" *Remote Sensing*, 12, no. 21: 3503. https://doi.org/10.3390/rs12213503

21. D. Boyd, M. Kurum, O. Eroglu, **A. C. Gurbuz**, J. L. Garrison; B. R. Nold, M. A. Vega, J. R. Piepmeier, R. Bindlish, "SCoBi Multilayer: A Signals of Opportunity Reflectometry Model for Multilayer Dielectric Reflections," in *Remote Sensing* 2020, 12(21), 3480; https://doi.org/10.3390/rs12213480

22. D. R. Boyd, **A. C. Gurbuz,** M. Kurum, J. L. Garrison, B.R. Nold, M. A. Vega, J. R. Piepmeier, R. Bindlish, "Cramer–Rao Lower Bound for SoOp-R-Based Root-Zone Soil Moisture Remote Sensing," in *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, vol. 13, pp. 6101-6114, 2020, doi: 10.1109/JSTARS.2020.3029158
23. **A. C. Gurbuz**, R. Mdrafi and B. A. Cetiner, "Cognitive Radar Target Detection and Tracking With Multifunctional Reconfigurable Antennas," in *IEEE Aerospace and Electronic Systems Magazine*, vol. 35, no. 6, pp. 64-76, 1 June 2020, doi: 10.1109/MAES.2020.2990589.
24. V. Senyurek, F. Lei, D. Boyd, M. Kurum, **A. C. Gurbuz**, R. Moorhead, "Machine Learning-Based CYGNSS Soil Moisture Estimates over ISMN sites in CONUS" *Remote Sensing*, 2020, 12, no. 7: 1168. https://doi.org/10.3390/rs12071168
25. R. Mdrafi and **A. C. Gurbuz**, "Joint Learning of Measurement Matrix and Signal Reconstruction via Deep Learning," in *IEEE Transactions on Computational Imaging*, vol. 6, pp. 818-829, 2020, doi: 10.1109/TCI.2020.2983153.
26. C. K. Anjinappa, **A. C. Gurbuz**, Y. Yapıcı and I. Guvenc, "Off-Grid Aware Channel and Covariance Estimation in mmWave Networks," in *IEEE Transactions on Communications*, vol. 68, no. 6, pp. 3908-3921, June 2020, doi: 10.1109/TCOMM.2020.2980829.
27. **A. C. Gurbuz**, Bedri A. Cetiner, "CRLB based mode selection and enhanced DOA estimation for multifunctional reconfigurable arrays," *Physical Communication*, Vol. 38, 100894, 2020. https://doi.org/10.1016/j.phycom.2019.100894
28. E. Ucer, M. C. Kisacikoglu, M. Yuksel and **A. C. Gurbuz**, "An Internet-Inspired Proportional Fair EV Charging Control Method," in *IEEE Systems Journal*, vol. 13, no. 4, pp. 4292-4302, Dec. 2019. doi: 10.1109/JSYST.2019.2903835.
29. O. Eroglu, M. Kurum, D. Boyd, and **A. C. Gurbuz**, "High Spatio-Temporal Resolution CYGNSS Soil Moisture Estimates Using Artificial Neural Networks," *Remote Sensing*, vol. 11, no. 19, pp.1-32, 2019. https://doi.org/10.3390/rs11192272

---------- Following journal publications are prior to joining MSU ----------

30. I. Ilhan, **A. C. Gurbuz** and O. Arikan, "Compressive Sensing based Robust Off-the-Grid Stretch Processing", *IET Radar, Sonar Navigation*, vol. 11, p. 1730-1735, 2017.
31. S. Camlica, **A. C. Gurbuz** and O. Arikan, "Autofocused Spotlight SAR Image Reconstruction of Off-Grid Sparse Scenes," in *IEEE Transactions on Aerospace and Electronic Systems*, vol. 53, no. 4, pp. 1880-1892, Aug. 2017.
32. D. Orlando, C. Hao, A. Aubry, G. Gui, S. Gazor, **A. C. Gurbuz**, "Special issue: advanced techniques for radar signal processing", Editorial on *EURASIP J. Adv. Signal Process*. 2017, 47 (2017). https://doi.org/10.1186/s13634-017-0481-0
33. M. Duman, **A. C. Gurbuz**, "3D Imaging for Ground Penetrating Radars via Dictionary Dimension Reduction", *TUBITAK Journal of Electrical Eng. and Computer Science*, vol. 23, pp. 1242-1256, 2015.
34. C. Karabacak, S. Z. Gurbuz, **A. C. Gurbuz,** M. B. Guldogan, G. Hendeby, F. Gustafsson,"Knowledge Exploitation for Human Micro-Doppler Classification," *IEEE Geoscience and Remote Sensing Letters*, vol.12, no.10, pp.2125-2129, Oct. 2015.
35. S. Ugur, O. Arıkan, **A. C. Gurbuz**, "SAR Image Reconstruction by Expectation Maximization Based Matching Pursuit," *Digital Signal Processing*, vol. 37, pp. 75-84, February 2015.
36. O. Teke, **A. C. Gurbuz**, O. Arikan, "A Robust Compressive Sensing Based Technique for Reconstruction of Sparse Radar Scenes," *Digital Signal Processing*, vol. 27, pp. 23-32, 2014.
37. **A. C. Gurbuz**, O. Teke, O. Arikan, "Sparse Ground Penetrating Radar Imaging Method for off-the-grid Target Problem," *Journal of Electronic Imaging*, vol. 22, no.2, 2013.
38. O. Teke, **A. C. Gurbuz**, O. Arikan, "Perturbed Orthogonal Matching Pursuit," *IEEE Transactions on Signal Processing*, vol. 61, no. 24, pp. 6220-6231, December 2013.
39. C Karakus, **A. C. Gurbuz**, B Tavli, "Analysis of Energy Efficiency of Compressive Sensing in Wireless Sensor Networks," *IEEE Sensors Journal*, vol.13, no.5, pp.1999-2008, May 2013.
40. **A. C. Gurbuz, "**Determination of Background Distribution for Ground Penetrating Radar Data**",** *IEEE Geoscience and Remote Sensing Letters*, vol. 9, no.4, pp.544-548, July 2012.

41. **A. C. Gurbuz**, V. Cevher and J. H. McClellan, "Bearing Estimation via Spatial Sparsity Using Compressive Sensing," *IEEE Transactions on Aerospace and Electronic Systems*, vol. 48, no. 2, pp. 1358-1369, April 2012.
42. **A. C. Gurbuz**, J. H. McClellan, and W.R. Scott, "Compressive Sensing of Underground Structures using GPR," *Digital Signal Processing*, vol. 22, no 1, pp. 66–73, January 2012.
43. M.A.C. Tuncer, **A. C. Gurbuz**, "Ground Reflection Removal in Compressive Sensing Ground Penetrating Radars," *IEEE Geoscience and Remote Sensing Letters*, vol. 9, no. 1, pp: 23-27, Jan. 2012.
44. M. Duman and **A. C. Gurbuz**, "Performance Analysis of Compressive Sensing Based Through-the-Wall Imaging with Effect of Unknown Parameters," *International Journal of Antennas and Propagation*, vol. 2012, Article ID 405145, 2012.
45. M. A. C. Tuncer, **A. C. Gurbuz**, "Analysis of Orthogonal Matching Pursuit Based Subsurface Imaging for Compressive Ground Penetrating Radars", *TUBITAK Journal of Electrical Engineering and Computer Science*, vol. 20, no. 6, pp. 979-989, 2012.
46. **A. C. Gurbuz** "Line Detection with Adaptive Random Samples," *TUBITAK Journal of Electrical Engineering and Computer Science*, vol. 19, no.1, pp. 21-32, 2011.
47. **A. C. Gurbuz**, J. H. McClellan, and W.R. Scott, "Detection of Linear and Planar Structures in 3D Subsurface Images by Iterative Dimension Reduction," *Digital Signal Processing*, vol. 20, no. 2, pp. 391-400, March 2010.
48. **A. C. Gurbuz**, J. H. McClellan, and W.R. Scott, "A Compressive Sensing Data Acquisition and Imaging Method for Stepped-Frequency GPRs," *IEEE Tran. on Signal Processing*, vol.57, no.7, pp. 2640-2650, July 2009.
49. **A. C. Gurbuz**, J. H. McClellan, and W.R. Scott "Compressive Sensing for Subsurface Imaging using Ground Penetrating Radar," *Signal Processing*, vol. 89, no. 10, pp. 1959-1972, October 2009. **[2013 EURASIP Best Paper Award for the Signal Processing Journal]**
50. T. Counts, **A. C. Gurbuz**, K. Kim, W. R. Scott, Jr and J. H. McClellan "Multistatic Ground-Penetrating Radar Experiments," *IEEE Trans. on Geoscience and Remote Sensing*, vol. 45, no 8, pp. 2544 – 2553, Aug. 2007.

PEER REVIEWED CONFERENCES:

Accepted / Under review:

1. Walaa Al-Qwider, Ahmed Manavi Alam, Md Mehedi Farhad, Mehmet Kurum, **Ali C. Gurbuz**, Vuk Marojevic, "Software Radio Testbed For 5g And L-Band Radiometer Coexistence Research", *IEEE International Geosciences and Remote Sensing Symposium (IGARSS'23), Pasadena, CA, 2023 (accepted)*
2. Md Mehedi Farhad, Sabyasachi Biswas, A. M. Alam, **Ali C. Gurbuz**, Mehmet Kurum, "SDR Based Agile Radiometer With Onboard RFI Processing On A Small UAS" *IEEE International Geosciences and Remote Sensing Symposium (IGARSS'23), Pasadena, CA, 2023 (accepted)*
3. Ahmed Manavi Alam, Mehmet Kurum, **Ali Gurbuz**, "High-Resolution Radio Frequency Interference Detection In Microwave Radiometry Using Deep Learning" *IEEE International Geosciences and Remote Sensing Symposium (IGARSS'23), Pasadena, CA, 2023 (accepted)*
4. Ege Bozdag, Volkan Senyurek, M.M. Nabi, Mehmet Kurum, **Ali Gurbuz**, "Fusing Sentinel-1 With Cygnss To Account For Vegetation Effects In Soil Moisture Retrievals" *IEEE International Geosciences and Remote Sensing Symposium (IGARSS'23), Pasadena, CA, 2023 (accepted)*

Published (reverse chronology):

1. S. Biswas, C. O. Ayna, S. Z. Gurbuz and **A. C. Gurbuz**, "Complex SincNet for More Interpretable Radar Based Activity Recognition," *2023 IEEE Radar Conference (RadarConf23)*, San Antonio, TX, USA, 2023, pp. 1-6, doi: 10.1109/RadarConf2351548.2023.10149682.
2. S. Biswas, B. Bartlett, J. E. Ball and **A. C. Gurbuz**, "Classification of Traffic Signaling Motion in Automotive Applications Using FMCW Radar," *2023 IEEE Radar Conference (RadarConf23*), San Antonio, TX, USA, 2023, pp. 1-6, doi: 10.1109/RadarConf2351548.2023.10149728.
3. G. D. King, M. A. Towfiq, **A. C. Gurbuz** and B. A. Cetiner, "Convolutional Neural Network Based

Antenna Beam Coefficient Generation for Planar Arrays," *2022 IEEE International Symposium on Antennas and Propagation* Denver, CO, USA, 2022, pp. 445-446, doi: 10.1109/AP-S/USNC-URSI47032.2022.9886789.

4. John T. Rogers, J. E. Ball, **A. C. Gurbuz**, "Data-Driven Covariance Estimation", *2022 IEEE International Symposium on Phased Array Systems and Technology*, Boston, MA, October 2022

5. C. O. Ayna, **A. C. Gurbuz**, "Robustness Analysis for Deep Learning-Based Image Reconstruction Models," 2022 *56th Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, USA, 2022, pp. 1428-1432,– Invited to special session

6. Md Mehedi Farhad, S. Biswas, M. A. Shahid Rafi, Mehmet Kurum, **Ali C Gurbuz**, "Design and Implementation of a Software Defined Radio-Based Radiometer Operating from a Small Unmanned Aircraft Systems", *2022 IEEE Inter. Symposium on Antennas and Propagation*, Denver, CO, pp. 17-18, doi: 10.23919/USNC-URSI52669.2022.9887529.

7. V. Senyurek, M. Farhad, F. Lei, **A. C. Gurbuz**, M. Kurum, R. Moorhead, Machine learning-based high resolution global and small scale soil moisture estimation using GNSS-R, *SouthEastCon* 2022, Mobile, AL, USA, 2022, pp. 434-435, doi: 10.1109/SoutheastCon48659.2022.9764039.

8. D. R. Boyd, A. M. Alam, M. Kurum, **A. C. Gurbuz**, B. Osmanoglu, "Preliminary Snow Water Equivalent Retrieval of SnowEx20 SWESARR Data", *IEEE International Geosciences and Remote Sensing Symposium (IGARSS'22)*, Kuala Lumpur, Malaysia, 2022, pp. 3927-3930, doi: 10.1109/IGARSS46834.2022.9883412.

9. M. Kurum, M. Farhad, J. Diao, **A. C. Gurbuz**, "A Ubiquitous GNSS-R Approach Using Spinning Smartphone Onboard A Small UAS", *IEEE International Geosciences and Remote Sensing Symposium (IGARSS'22),* Kuala Lumpur, Malaysia, 2022, pp. 5208-5211, doi: 10.1109/IGARSS46834.2022.9883803

10. Ahmed M. Alam, **A. Gurbuz**, M. Kurum, "SMAP radiometer RFI prediction with deep learning using antenna counts", *IEEE International Geosciences and Remote Sensing Symposium (IGARSS'22)*, Kuala Lumpur, Malaysia, 2022, pp. 8016-8019, doi: 10.1109/IGARSS46834.2022.9884010. – Best Student Paper Finalist.

11. R. Mdrafi and **A. C. Gurbuz**, 'Data Driven Joint Hyperspectral Band Selection and Image Classification' *IEEE International Geosciences and Remote Sensing Symposium (IGARSS'22),* Kuala Lumpur, Malaysia, 2022, pp. 1736-1739, doi: 10.1109/IGARSS46834.2022.9883821.

12. M. M. Nabi, V. Senyurek, **A. Gurbuz**, M. Kurum, "A Deep Learning-Based Soil Moisture Estimation In Conus Region Using Cygnss Delay Doppler Maps" *IEEE International Geosciences and Remote Sensing Symposium (IGARSS'22),* Kuala Lumpur, Malaysia, 2022, pp. 6177-6180, doi: 10.1109/IGARSS46834.2022.9883916.

13. E. Kurtoglu, **A. C. Gurbuz**, E. Malaia, S. Gurbuz, "RF Micro-Doppler Classification with Multiple Spectrograms from Angular Subspace Projections" , *2022 IEEE Radar Conference (RadarConf22*), New York City, NY, USA, 2022, pp. 1-6, doi: 10.1109/RadarConf2248738.2022.9763904.

14. M. Rahman, E. Kurtoglu, M. Taskin, K. Esmer, **Ali C. Gurbuz**, E. Malaia, S. Gurbuz, "Performance Comparison of Radar and Video for American Sign Language Recognition" *IEEE 2022 Radar Conference*, New York City, NY, USA, 2022, pp. 1-6, doi: 10.1109/RadarConf2248738.2022.9764269.

15. Emin Ucer, Emre Kurtoglu, Mithat Kisacikoglu, **Ali Gurbuz**, Sevgi Gurbuz "Local Detection of OLTC Operation to Support Decentralized Control of Active End-Nodes" *2022 IEEE Power & Energy Society General Meeting (PESGM)*, Denver, CO, USA, 2022, pp. 1-5, doi: 10.1109/PESGM48719.2022.9917001.

16. R. Mdrafi and **A. C. Gurbuz**, "Compressed Classification From Learned Measurements" *Proceedings of the IEEE/CVF International Conference on Computer Vision (ICCV) Workshops*, October 2021, pp: 4038-4047

17. R. Mdrafi and **A. C. Gurbuz**, "Data Driven Learning of Constrained Measurement Matrices for Signal Reconstruction," *2021 55th Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, USA, 2021, pp. 1597-1601.

18. M. Rahman, E. Kurtoglu, R. Mdrafi, **A. C. Gurbuz**, E. Malaia, C. Crawford, D. Griffin, S. Gurbuz, "Word-Level ASL Recognition and Trigger Sign Detection with RF Sensors", in Proc. *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Toronto, ON, Canada, 2021, pp. 8233-8237.

19. M. Rahman, S. Z. Gurbuz, **A. C. Gurbuz**, E. A. Malaia; D. J. Griffin; C. Crawford "Word-Level Sign Language Recognition Using Linguistic Adaptation of 77 GHz FMCW Radar Data", in Proc. *IEEE Radar Conference*, Atlanta, GA, May 2021.

20. E. Kurtoglu, S. Z. Gurbuz, **A. C. Gurbuz**, E. A. Malaia; D. J. Griffin; C. Crawford "Sequential Classification of Sign Language Gestures in the Context of Daily Living Using RF Sensing", in Proc. *IEEE Radar Conference*, Atlanta, GA, May 2021.
21. F. Lei, V. Senyurek, M. Kurum, **A. C. Gurbuz**, D. Boyd, R. Moorhead, "Quasi-global GNSS-R soil moisture retrievals at high spatio-temporal resolution from CYGNSS and SMAP data" *IEEE International Geosciences and Remote Sensing Symposium (IGARSS'21),* Brussels, 2021.
22. V. Senyurek, **A. C. Gurbuz**, M. Kurum, F. Lei, D. Boyd, R. Moorhead, "Spatial and temporal interpolation of CYGNSS soil moisture estimations", *IEEE International Geosciences and Remote Sensing Symposium (IGARSS'21),* Brussels, 2021.
23. S. Butler, S. R. price, **Ali C. Gurbuz**, S. J. price, J. R. Fairley, "Investigation of Band selection techniques to Enable Classification of Hyperspectral Imagery at the edge", *SPIE Defense Commercial Sensing*, Proceedings Volume 11736, Real-Time Image Processing and Deep Learning 2021; 117360L, 2021, Orlando, FL.
24. M. Kurum, **Ali C. Gurbuz**, S. Barnes, D. Boyd, M. Duck, M. Farhad, A. Flynt, N. Goyette, P. Peranich, M. Schneider, V. Senyurek, "A UAS based RF testbed for water utilization in agroecosystems", *SPIE Defense Commercial Sensing*, Proceedings Volume 11747, Autonomous Air and Ground Sensing Systems for Agricultural Optimization and Phenotyping VI; 117470J (2021), Orlando, FL.
25. S. Z. Gurbuz; **A. C. Gurbuz**; E. A. Malaia; D. J. Griffin; C. Crawford; E. Kurtoglu; M. M. Rahman; R. Aksu; R. Mdrafi, "ASL Recognition Based on Kinematics Derived from a Multi-Frequency RF Sensor Network*," 2020 IEEE SENSORS*, Rotterdam, Netherlands, 2020, pp. 1-4. [*Selected by Technical Program Committee as a Top Paper*]
26. Eric D. Farmer, John E. Ball, **Ali C. Gurbuz**, "Extending free-space mapping to unstructured, off-road environments," *Proc. SPIE 11415, Autonomous Systems: Sensors, Processing, and Security for Vehicles and Infrastructure* 2020, 1141509 (23 April 2020); https://doi.org/10.1117/12.2561083
27. E. Ucer, M. Kisacikoglu, **A. Gurbuz**, S. Rahman and M. Yuksel, "A Machine Learning Approach for Understanding Power Distribution System Congestion," *2020 IEEE Energy Conversion Congress and Exposition (ECCE)*, Detroit, MI, USA, 2020, pp. 1977-1983, doi: 10.1109/ECCE44975.2020.9236353.
28. S. Z. Gurbuz, **A. C. Gurbuz**, E. A. Malaia, D. J. Griffin, C. Crawford, M. M. Rahman, R. Aksu, E. Kurtoglu, R. Mdrafi, A. Anbuselvam, T. Macks, E. Ozcelik, "A Linguistic Perspective on Radar Micro-Doppler Analysis of American Sign Language", *2020 IEEE International Radar Conference*, Washington D.C. April 27 - May 1, 2020
29. M. Kurum, **A. C. Gurbuz**, and Mehedi Farhad, "GNSS Reflectometry from Smartphones: Testing performance of In-built antennas and GNSS chips," *IEEE International Geosciences and Remote Sensing Symposium (IGARSS'20),*Waikoloa (Hawaii), Jul. 19–Jul. 24, 2020.
30. F. Lei, V. Senyurek, M. Kurum, **A. C. Gurbuz**, R. Moorhead and D. Boyd, "Machine Learning based Retrieval of Soil Moisture at High Spatio-Temporal Scales using CYGNSS and SMAP Observations," *IEEE International Geosciences and Remote Sensing Symposium (IGARSS'20),* Waikoloa (Hawaii), Jul. 19–Jul. 24, 2020.
31. D. Boyd, M. Kurum and **A. C. Gurbuz**, "Preliminary Study of Cramer-Rao Lower Bound for Subsurface Soil Moisture Estimation using SoOp Reflectometry," *IEEE International Geosciences and Remote Sensing Symposium (IGARSS'20)*,Waikoloa (Hawaii), Jul. 19–Jul. 24, 2020.
32. C. K. Anjinappa, **A. C. Gurbuz**, Y. Yapici, I. Guvenc, "Off-Grid Aware Spatial Covariance Estimation in mmwave Communications" *Asilomar Conference on Signals Systems and Computers*, Asilomar Grounds, CA, Nov 1-4 2019.
33. R. H. MdRafi and **A. C. Gurbuz**, "Learning to Sense and Reconstruct A Class of Signals," *2019 IEEE Radar Conference (RadarConf)*, Boston, MA, USA, 2019, pp. 1-5.
34. D. R. Boyd, M. Kurum, J. L. Garrison, B. Nold, R. Mdrafi, O. Eroglu, **A. C. Gurbuz**, J. Piepmeier, M. S. Vega, and R. Bindlish, "Inversion Study of Simulated and Physical Soil Moisture Profiles Using Multifrequency SoOP-Sources," In: *Proceedings of the IEEE International Geosciences and Remote Sensing Symposium (IGARSS'19)*, Valencia, Spain, Jul. 28–Aug. 2, 2019. (invited)
35. O. Eroglu, M. Kurum, D. R. Boyd, **A. C. Gurbuz**, "Investigations Into CYGNSS-based Soil Moisture Retrieval Algorithms, " In: Proceedings of the IEEE International Geosciences and Remote Sensing Symposium (IGARSS'19), Valencia, Spain, Jul. 28–Aug. 2, 2019.
36. J. Rogers, J. E. Ball and **A. C. Gurbuz**, "Estimating the Number of Sources via Deep Learning," *2019 IEEE Radar Conference (RadarConf)*, Boston, MA, USA, 2019, pp. 1-5.
37. R. H. MdRafi and **A. C. Gurbuz**, "Data Driven Measurement Matrix Learning for Sparse Reconstruction," *2019*

IEEE Data Science Workshop (DSW), Minneapolis, MN, USA, 2019, pp. 253-257.

---------- Following conference publications are prior to joining MSU ----------

38. E. Ucer, M. C. Kisacikoglu and **A. C. Gurbuz**, "Learning EV Integration Impact on a Low Voltage Distribution Grid," *2018 IEEE Power & Energy Society General Meeting (PESGM)*, Portland, OR, 2018, pp. 1-5.
39. **A. C. Gurbuz** and B. Cetiner, "Multifunctional reconfigurable antennas for cognitive radars," *2018 IEEE Radar Conference (RadarConf18)*, Oklahoma City, OK, 2018, pp. 1510-1515.
40. P. Gogineni, C.R. Simpson, J. Yan, C. R. Oneill, R. Sood, S. Gurbuz, **A. C. Gurbuz** "A CubeSat Train for Radar Sounding and Imaging of Antarctic Ice Sheet," *2018 IEEE International Geoscience and Remote Sensing Symposium* (IGARSS), Valencia, 2018, pp. 4138-4141.
41. **A. C. Gurbuz**, Y. Yapici and I. Guvenc, "Sparse Channel Estimation in Millimeter-Wave Communications via Parameter Perturbed OMP," *2018 IEEE International Conference on Communications Workshops (ICC Workshops)*, Kansas City, MO, 2018, pp. 1-6.
42. **A. C. Gurbuz**, "Adaptive measurement design for direction of arrival estimation and target tracking", In *SPIE Compressive Sensing VII: From Diverse Modalities to Big Data Analytics*, vol. 10658, pp. 68-76. SPIE, 2018.
43. **A. C. Gurbuz**, "Perturbation based sparse subspace clustering", *SPIE Compressive Sensing VII: From Diverse Modalities to Big Data Analytics*, vol. 10658, pp. 159-169. SPIE, 2018.
44. A. **C. Gurbuz**, S. Z. Gurbuz, B. Cetiner, "Cognitive radar utilizing multifunctional reconfigurable antennas", SPIE Conference on Radar Sensor Technology XXII, April 2018
45. M. İspir, A. Orduyılmaz, M. Serin, A. Yıldırım and **A. C. Gurbuz**, "Real-time multiple velocity false target generation in digital radio frequency memory," *2016 IEEE Radar Conference (RadarConf)*, Philadelphia, PA, 2016, pp. 1-6.
46. S. Camlica, **A. C. Gurbuz** and O. Arikan, "SAR image reconstruction with joint off-grid target and phase error corrections," *2015 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Milan, 2015, pp. 4502-4505.
47. I. Ilhan, **A. C. Gurbuz** and O. Arikan, "Sparsity based robust Stretch Processing," *2015 IEEE International Conference on Digital Signal Processing (DSP)*, Singapore, 2015, pp. 95-99.
48. S. Camlica, H. E. Guven, **A. C. Gurbuz** and O. Arikan, "Analysis of sparsity based joint SAR image reconstruction and autofocus techniques," in *3rd International Workshop on Compressed Sensing Theory and its Appl. to Radar, Sonar and Remote Sensing (CoSeRa)*, Pisa, 17-19 June 2015, pp.99-103.
49. A. Orduyılmaz, G. Kara, M. Serin, A. Yıldırım, **A. C. Gurbuz** and M. Efe, "Real-time pulse compression radar waveform generation and digital matched filtering," *2015 IEEE Radar Conference (RadarCon)*, Arlington, VA, 2015, pp. 0426-0431.
50. O. Teke, **A. C. Gurbuz**, O. Arikan, "A recursive way for sparse reconstruction of parametric spaces," *48th Asilomar Conf. on Signals, Systems and Computers*, Pacific Grove, CA, 2014, pp. 637-641.
51. O. Teke, **A. C. Gurbuz** and O. Arikan, "Sparse Delay-Doppler image reconstruction under off-grid problem," *IEEE 8th Sensor Array and Multichannel Signal Processing Workshop (SAM)*, A Coruna, Spain, 2014, pp. 409-412.
52. B. Erol, C. Karabacak, S. Z. Gürbüz and **A. C. Gurbuz**, "Simulation of human micro-Doppler signatures with Kinect sensor," *2014 IEEE Radar Conference*, Cincinnati, OH, 2014, pp. 0863-0868.
53. C. Karabacak, S. Z. Gurbuz, M. B. Guldogan, **A. C. Gurbuz**, "Multi-Aspect Angle Classification of Human Radar Signatures" *SPIE Conference on Active and Passive Signatures IV*, Vol. 8734, Article Number: UNSP 873408, Baltimore, MD, USA, 2013.
54. C. Karakuş, **A. C. Gurbuz** and B. Tavli, "Energy and lifetime analysis of compressed Wireless Sensor Network communication," *IEEE Sensors Appl. Symp. (SAS)*, Galveston, TX, 2013, pp. 7-10.
55. B. Tekeli, S. Z. Gürbüz, M. Yüksel, **A. C. Gurbuz** and M. B. Guldogan, "Classification of human micro-Doppler in a radar network," *2013 IEEE Radar Conference*, Ottawa, ON, 2013, pp. 1-6.
56. S. Ugur, O. Arikan and **A. C. Gurbuz**, "Off-grid sparse SAR image reconstruction by EMMP algorithm," *2013 IEEE Radar Conference (RadarCon13)*, Ottawa, ON, 2013, pp. 1-4.
57. S. Z. Gürbüz, B. Tekeli, M. Yüksel, C. Karabacak, **A. C. Gürbüz** and M. B. Guldogan, "Importance ranking of features for human micro-Doppler classification with a radar network," *2013 16th International Conference on Information Fusion (FUSION)*, Istanbul, 2013, pp. 610-616.

58. O. Teke, **A. C. Gurbuz,** O. Arikan, "Sparse Reconstruction Under Model Uncertainties", *Signal Processing with Adaptive Sparse Structured Representations*, EPFL, Lausanne, July 8-11, 2013.
59. A. **C. Gurbuz**; M. Pilanci, O. Arikan, "Expectation Maximization Based Matching Pursuit" *IEEE Int. Conf. on Acoustics, Speech and Signal Processing (ICASSP)*, Kyoto, Japan, March 25-30, 2012.
60. M. Duman, **A. C. Gurbuz,** "Analysis of Compressive Sensing Based Through the Wall Imaging," IEEE *Radar Conference (RADAR)*, Atlanta, GA May 07-11, 2012.
61. M. A. C. Tuncer and **A. C. Gurbuz**, "Analysis of unknown velocity and target off the grid problems in compressive sensing based subsurface imaging," *2011 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Prague, Czech Republic, 2011, pp. 2880-2883.
62. A. **C. Gurbuz**, "Sparsity Enhanced Fast Subsurface Imaging with GPR", *XIII International Conference on Ground Penetrating Radar*, Lecce, Italy, 2010.
63. A. **C. Gurbuz**, W. R. Scott, Jr., J. H. McClellan, "Location estimation using a broadband electromagnetic induction array", *Proc. of the SPIE Detection and Sensing of Mines, Exp. Obj., and Obsc. Targets XIV*, Vol. 7303, pp. 73030U-73030U-9, 2009.
64. A. **C. Gurbuz**, "Shape Detection in Images Exploiting Sparsity", *24th International Symposium on Computer and Information Sciences*, Guzelyurt, KKTC, 14-16 Sept. 2009, pp. 70 – 75.
65. **A. C. Gurbuz**, J. H. McClellan, and W. R. Scott, Jr., "GPR Imaging Using Compressed Measurements", *IEEE International Symposium on Geoscience and Remote Sensing, (IGARSS)*, Boston USA, July 2008, pp. II-13 - II-16.
66. A. **C. Gurbuz**, J. H. McClellan and V. Cevher, "A Compressive Beamforming Method", *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Las Vegas, USA, March 2008, pp. 2617 – 2620.
67. A. **C. Gurbuz**, J. H. McClellan, J. Romberg and W. R. Scott, "Compressive Sensing of Parameterized Shapes in Images", *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Las Vegas, USA, March 2008, pp. 1949 – 1952.
68. V. Cevher, **A. C. Gurbuz**, J. H. McClellan, "Compressive Wireless Arrays for Bearing Estimation", *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Las Vegas, USA, March 2008, pp. 2497 – 2500.
69. A. **C. Gurbuz**, J. H. McClellan and W. R. Scott, Jr. "Compressive Sensing for GPR Imaging," *41st Asilomar Conf. on Signals, Systems and Computers*, Pacific Grove, CA, Nov. 2007, pp. 2223-2227.
70. A. **C. Gurbuz**, J. H. McClellan, W. R. Scott, Jr. "Feature Detection in Images by Adaptive Random Sampling", *IEEE Statistical Signal Processing Workshop*, Madison, USA, August 2007, pp. 591 - 595.
71. A. **C. Gurbuz**, J. H. McClellan, W. R. Scott, Jr. "Feature Detection in Highly Noisy Images using Random Sample Theory", *The 15th International Conference on Digital Signal Processing*, Cardiff, UK, July 1-4 2007, pp. 423- 426.
72. T. Counts, G. D. Larson, **A. C. Gurbuz**, J. H. McClellan, W. R. Scott, Jr "Investigation of the detection of shallow tunnels using electromagnetic and seismic waves", *Proc. SPIE in Detection and Remediation Technologies for Mines and Minelike Targets XII,* vol. 6553, pp. 65531G, 2007.
73. A. **C. Gurbuz**, J. H. McClellan, W. R. Scott, Jr., "Detecting Curved Underground Tunnels using Partial Radon Transforms" *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Honolulu, Hawaii, April 2007, pp(s): I-545-I-548, 15-20.
74. V. Cevher, R. Chellappa, **A. C. Gurbuz**, F. Shah, and James H. McClellan, "Vehicle Fingerprinting Using Drive-By Sounds" *25th Army Science Conf.*, Orlando, FL, 2006.
75. W. R. Scott, Jr., T. Counts, G. D. Larson, **A.C. Gurbuz**, and J. H. McClellan, "Combined Ground Penetrating and Seismic System for Detecting Tunnels", *IEEE Int'l Geoscience and Remote Sensing Symposium (IGARSS)*, Denver, CO, USA, Aug 2006, pp. 1232 – 1235.
76. **A. C. Gurbuz** and J. H. McClellan, "Iterative Detection of Linear Objects in GPR and Seismic Images", *4th IEEE Workshop on Sensor Array and Multi-Channel Proc.*, Waltham, MA, July 2006, pp. 118 - 121.
77. **A. C. Gurbuz**, J. H. McClellan, W. R. Scott, Jr., and G. Larson, "Seismic Tunnel Imaging and Detection," *IEEE International Conf. on Image Proc.*, Atlanta, GA, October 2006, pp. 3229 - 3232.
78. **A. C. Gurbuz**, T. Counts, K. Kim, "Application of Multi-Static Inversion Algorithms to Landmine Detection," *Proc. of the SPIE, Detection and Remediation Technologies for Mines and Minelike Targets XI*, vol. 6217, Orlando FL, USA, 2006, pp. 621724-1, 621724-10.

79. **A. C. Gurbuz**, J. H. McClellan and W. R. Scott Jr., "Predicting GPR Target Locations Using Time Delay Differences," *Proc. of the SPIE, Detection and Remediation Technologies for Mines and Minelike Targets XI*, Orlando FL, USA, 2006, pp: 621731-1, 621731-9.
80. A. **C. Gurbuz**, J. H McClellan, W. R Scott, "Subsurface Target Imaging Using a Multi-Resolution 3D Quadtree Algorithm," in *Proc. of the SPIE vol.* 5794, Orlando FL, USA, 2005, pp. 1172-1181.
81. K. Kim, **A. C. Gurbuz**, W. R Scott, J. H McClellan, "A Multi-Static Ground-Penetrating Radar with an Array of Resistively Loaded Vee Dipole Antennas for Landmine Detection," in *Proc. Of SPIE*, vol. 5794, Orlando FL, USA, June 2005, pp. 495–506.
82. **A. C. Gurbuz**, J. H. McClellan, and W. R. Scott, Jr., "Imaging of Subsurface Targets Using a 3D Quadtree Algorithm", *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP),* Vol. 4, pp. iv/1105 - iv/1108, 18-23 March, 2005.
83. W. R. Scott, Jr., K. Kim, G. D. Larson, **A. C. Gurbuz**, and J. H. McClellan, "Combined Seismic, Radar, and Induction Sensor for Landmine Detection", *Proc. of the Int'l IEEE Geoscience and Remote Sensing Sym.*, Vol.3, pp(s): 1613 - 1616, 2004.

OTHER PUBLICATIONS (Abstracts, Non-English Publications):

1. M M Nabi, Volkan Senyurek, Fangni Lei, Mehmet Kurum, **Ali C. Gurbuz**, "Evaluation of Deep-Learning Approach for Quasi-Global Soil Moisture Retrieval using CYGNSS" *IEEE GNSS+R 2023*, Boulder, CO, USA
2. Kurum, Mehmet, Mehedi Farhad, Volkan Senyurek, and **Ali Gurbuz**, "Enabling subfield scale soil moisture mapping in near real-time by recycling L-band GNSS signals from drones". *European Geophysical Union EGU23-10991. Copernicus Meetings*, 2023.
3. M. Duck, **A. C. Gurbuz**, A. Kurum, "Design and Implementation of a Ground Penetrating Radar (GPR) from an Unmanned Aircraft System (UAS)", in *Proceedings of The USNC/URSI Radio Science Meeting*, Boulder, CO (USA), Jan. 2022.
4. Ahmed M. Alam, **A. Gurbuz**, M. Kurum, "Deep Learning Based RFI Detection and Mitigation for SMAP Using Convolutional Neural Networks", *Radio Frequency Interference (RFI) workshop*, February 2022
5. V. Senyurek, M. Farhad, **A. C. Gurbuz**, M. Kurum, R. Moorhead, "Soil Moisture Mapper: a GNSS-R approach for soil moisture retrieval on UAV" *AI for Agriculture and Food Systems 2022 Workshop*, March 2022
6. O. Eroglu, D. R. Boyd, **A. C. Gurbuz**, and M. Kurum, "Relating CYGNSS Observations to Soil Moisture Variations During The 2018 Hurricane Season," presented In *Proceedings of the USNC/URSI Radio Science Meeting, Boulder*, CO (USA), Jan. 9–12, 2019.
7. D. R. Boyd, M. Kurum, O. Eroglu, **A. C. Gurbuz**, J. L. Garrison, B. Nold, J. Piepmeier, M. S. Vega, and R. Bindlish, "Investigation of Root-Zone Soil Moisture Profile Sensitivity to Multiple Signal of Opportunity Sources," in *Proceedings of the USNC/URSI Radio Science Meeting*, Boulder, CO (USA), Jan. 9–12, 2019.
8. M. Kurum, **A. C. Gurbuz**, M. Scheider, C. Nelson, L. Orsini, "On the Feasibility of Environmental Monitoring via Interferometric Smartphone GNSS Reflectometry, " in *Proceedings of The Institute of Navigation (ION)'s Pacific PNT Conference*, Honolulu, HI, April. 8–11, 2019.

---------- Following conference publications are prior to joining MSU and are in Turkish ----------

9. Y. K. Alp, A. B. Korucu, A. T. Karabacak, **A. C. Gurbuz** and O. Arıkan, "Online calibration of Modulated Wideband Converter," IEEE *24th Signal Processing and Communication Application Conference (SIU)*, Zonguldak, 2016, pp. 913-916.
10. I. E. Ortatatlı, A. Orduyılmaz, M. Serin, O. Özdil, A. Yıldırım and **A. C. Gurbuz**, "Real-time frequency parameter extraction for electronic support systems," IEEE *24th Signal Proc. and Communications Appl. Conf.*, Zonguldak, 2016, pp. 105-108
11. A. Orduyilmaz, M. Serin, A. Yildirim, K. Ceyhan, **A. C. Gurbuz,** "Hybrid phase amplitude direction finding method," IEEE *23th Signal Proc. and Communications Appl. Conf.*, Malatya, 2015, pp. 109-112.
12. B. Gunyel, R.G. Cinbis, S. Ture, **A. C. Gurbuz,** "Hyperspectral target detection - An experimental study," IEEE *23th Signal Proc. and Communications Appl. Conf.*, Malatya, 2015, pp. 2627-2630.
13. C. Aydemir, **A. C. Gurbuz,** I.Bahceci, "Non-Linear junction detectors: Experimental performance analysis," IEEE *23th Signal Proc. and Communications Appl. Conf.*, Malatya, 2015, pp. 2278-2281.

14. I. Ilhan, **A. C. Gurbuz,** "Finding sparse parametric shapes from low number of image measurements," IEEE *23th Signal Proc. and Communications Appl. Conf.*, Malatya, 2015, pp. 2314-2317.
15. S.B. Akdemir, A Orduyilmaz, **A. C. Gurbuz**, A Yildirim, "Analysis of frequency modulated continuous wave signals using time-frequency domain shape features," IEEE *22nd Signal Processing and Communications Applications Conference (SIU)*, Trabzon, 2014.
16. O. Teke, O. Arikan, **A. C. Gurbuz**, "A recursive approach to reconstruction of sparse signals," *IEEE 22nd Signal Processing and Communications Applications Conference (SIU)*, Trabzon, 2014.
17. C. Karabacak, S.Z. Gurbuz, **A. C. Gurbuz**, "Automatic human activity classification using radar," *IEEE 22nd Signal Processing and Communications Applications Conference (SIU),* Trabzon, 2014.
18. B. Erol, C. Karabacak, S.Z. Gurbuz, **A. C. Gurbuz**, "Radar simulation of different human activities via Kinect" *IEEE 22nd Signal Processing and Communications Appl. Conference (SIU),* Trabzon, 2014.
19. R.T. Albayrak, **A. C. Gurbuz**, B. Gunyel, "Compressed sensing based hyperspectral unmixing," *IEEE 22nd Signal Processing and Communications Applications Conference (SIU),* Trabzon, 2014.
20. A. Orduyilmaz, M. Serin, **A. C. Gurbuz**, A. Yildirim, "Passive direction finding using amplitude and phase comparison techniques," *IEEE 22nd Signal Processing and Communications Applications Conference (SIU),* Trabzon, 2014.
21. A. Ataman, B. Tekeli, **A. C. Gurbuz,** "Development of A Stepped Frequency GPR Prototype," *IEEE 21st Signal Processing and Communications Appl. Conference (SIU)*, Cyprus, April 24-26, 2013.
22. C. Karabacak, S. Z. Gurbuz, **A. C. Gurbuz,** "Radar Simulation of Human Micro-Doppler Signature from Video Motion Capture Data," IEEE *21st Signal Processing and Communications Applications Conference (SIU)*, Cyprus, April 24-26, 2013.
23. O. Teke, O. Arikan, **A. C. Gurbuz,** "Compressive Sensing Based Target Detection in Delay-Doppler Radars," *IEEE 21st Signal Processing and Communications Applications Conference (SIU)*, Cyprus April 24-26, 2013.
24. O. Teke, **A. C. Gurbuz,** and O. Arikan, "A new OMP technique for sparse recovery," *IEEE 20th Signal Processing and Communications Applications Conference (SIU)*, Fethiye, Turkey, 2012.
25. C. Karakus, **A. C. Gurbuz,** and B. Tavli, "Efficiency of Compressive Sensing on the lifetime of Wireless Sensor Networks," *IEEE 20th Signal Processing and Communications Applications Conference (SIU)*, Fethiye, Turkey, 2012.
26. M. Duman and **A. C. Gurbuz**, "Through the wall imaging with Compressive Sensing and effects of unknown parameters to the performance," *IEEE 20th Signal Processing and Communications Applications Conference (SIU)*, Fethiye, Turkey, 2012.
27. H. Ilbegi and **A. C. Gurbuz**, "Demosaicking with compressive sensing," *IEEE 20th Signal Processing and Communications Applications Conference (SIU),* Fethiye, Turkey, 2012.
28. S. Ugur, O. Arikan, **A. C. Gurbuz**, "SAR image reconstruction by EMMP algorithm," *IEEE 20th Signal Processing and Communications Applications Conference (SIU),* Fethiye, Turkey, 2012.
29. M. C. Aktas and **A. C. Gurbuz**, "Recognition of stagger pulse repetition interval for electronic support systems," IEEE 20th Signal Processing and Communications Applications Conference (SIU), Fethiye, Turkey, 2012.
30. M. A. C. Tuncer and **A. C. Gurbuz**, "Surface reflection removal in compressed sensing GPR and sparse subsurface imaging," *IEEE 19th Signal Proc. and Communications Appl. Conference (SIU),* Antalya, 2011, pp. 166-169.
31. M. Duman and **A. C. Gurbuz**, "Developing data simulation platform and signal processing technics for ground penetrating radar," *IEEE 19th Signal Proc. and Communications Appl. Conference (SIU)*, Antalya, 2011, pp. 190-193.
32. **A. C. Gurbuz**, M. Pilancı and O. Arıkan, "Sparse signal reconstruction with ellipsoid enlargement," *IEEE 19th Signal Proc. and Communications Appl. Conference (SIU)*, Antalya, 2011, pp. 793-796.
33. C. Karakuş and **A. C. Gurbuz**, "Comparison of iterative sparse recovery algorithms," *IEEE 19th Signal Processing and Communications Applications Conference (SIU),* Antalya, 2011, pp. 857-860.
34. M.A. Tuncer and **A. C. Gurbuz**, "Sparsity enhanced fast subsurface imaging for stepped frequency GPRs," *IEEE 18th Signal Proc. and Communications Appl. Conf.*, Diyarbakir, 2010, pp. 443-446.
35. L. Ayas and **A. C. Gurbuz**, "Analysis of required measurement number in compressive sensing," *IEEE 18th Signal Proc. and Communications Appl. Conf.*, Diyarbakir, 2010, pp. 914-917.

36. **A. C. Gurbuz**, J. H. McClellan and W. R. Scott, "Detecting Features using Random Sample Theory," *IEEE 15th Signal Proc. and Communications Appl. Conf.*, Eskisehir, 2007, pp. 1-4.
37. **A. C. Gurbuz**, J. H. McClellan and W. R. Scott, "Locating Subsurface Targets Using Minimal GPR Measurements," *IEEE 14th Signal Proc. and Communications Appl. Conf.*, Antalya, 2006, pp. 1-4.
38. **A. C. Gurbuz**, J. H. McClellan, W. R. Scott and G. D. Larson, "Seismic Imaging and Detection of Underground Tunnels," *IEEE 14th Signal Proc. and Communications Appl.*, Antalya, 2006, pp. 1-4.

PATENTS AND INTELLECTUAL PROPERTIES:

1. Inventors: M. Kurum (75%) and **A. C. Gurbuz** (25%), Title of Invention: A methodology to map topsoil moisture from small, unmanned aircraft systems, Invention Disclosure Form submitted to OTM, September 30, 2020, License Option Agreement Signed, October 2020.
2. Gurbuz, Sevgi Zubeyde, **Ali Cafer Gurbuz**, Chris Crawford, and Darrin Griffin. "Radar-based methods and apparatus for communication and interpretation of sign languages." U.S. Patent 11,301,672, issued April 12, 2022.
3. **A. C. Gurbuz**, V. Cevher, J. H. McClellan, and R. Chellappa, "Compressive Wireless Arrays for Bearing Estimation", filed with Georgia Tech Research Corp. PCT/US2008/082210, 2010. [Before MSU]

Awards and Scholarships

Awards:

- IEEE IGARSS Best Student Paper Finalist, 2022
- NSF CAREER Award, 2021
- Certificate of Excellence in recognition of contributions to research in Electrical and Computer Engineering at MSU, 2020
- TUBA – GEBİP Turkish Academy of Sciences Best Young Scholar Award in Electrical and Electronics Engineering, 2014
- TÜBİTAK Project Performance Award (for Project 109E280 - Compressive Remote Sensing and Imaging), 2014
- EURASIP Best Paper Award for the Signal Processing Journal, 2013
- IEEE SIU Conference 2. place in Best Application Paper Award, 2012
- TOBB ETÜ Best Young Scientist Award, 2010
- European Union Marie Curie Fellow Award, 2009
- IEEE SIU Conference 3. Place in Alper Atalay Best Student Paper, 2007
- IEEE SIU Conference 3. Place in Best Student Paper, 2005
- Best Educational Program in National (Turkey) Software Quest, 2002
- 3rd in TÜBİTAK National Physics Olympiads in Aegean Region,1999
- Bronze Medal in 6th TÜBİTAK National Physics Olympiads, 1998
- Necdet Evliyagil poem writing competition honorable mention award, 1997
- 1st in Milliyet Knowledge and Culture Competition nationwide, 1996
- 6th in Turkey in National Science High School Entrance Test nationwide, 1996

Scholarships:

- Graduate Research Assistantship from Georgia Inst. of Tech, 2003-2008
- Full Undergraduate scholarship (tuition and stipend) by Bilkent University, 1999-2003
- Netas Undergraduate Distinguished Student Scholarship, 2003

Teaching

Teaching at Mississippi State University:

From Fall 2018 to the current semesester, I have taught a total of 10 classess, of which 6 are only undergraduate level, 3 are split level (both undergraduate and graduate) and1 is only graduate level. In addition, I have taught 12 Directed Individual Studies (DIS), which are specialized graduate-level classes for one student. Total number of enrollment in these classes were 402 and average student rating was **4.16/5.0** between Fall 2018-Spring 2021 (Number of student responses is 193) and was **3.43/4.0** Fall 2021-Fall 2023 (Number of student responses is 127). Before Fall 2021, the university utilized a 5-point Likert scale measure to record instructional performance, with "averaging" being the qualifier metric. In Fall 2021, the university transitioned to a 4-point system with "median" as the quantifier metric. Following Tables list the teaching summary at MSU:

Teaching summary for Ali Gurbuz between Fall 2021-Fall 2023

Course Number	Course Title	UG/ Grad	Semester	Enroll-ment	No of Responders	Median **out of 4.0**
ECE 3443	Signals and Systems – current	U	Fall 23	46		
ECE 7000	Directed Individual Study – current	G	Fall 23	1		
ECE 7000	Directed Individual Study	G	Sum 23	2	0	N/A
ECE 7000	Directed Individual Study	G	Spr 23	1	0	N/A
ECE 3443 - 01	Signals and Systems	U	Fall 22	61	53	3.9/4
ECE 3443- 501	Signals and Systems (Distance)	U	Fall 22	5	3	3.1/4
ECE 7000	Directed Individual Study	G	Fall 22	2	0	N/A
ECE 3443 - 01	Signals and Systems	U	Spr 22	62	58	3/4
ECE 7000	Directed Individual Study	G	Spr 22	1	0	N/A
ECE 6433-01	Introduction to Radar	G	Fall 21	7	6	3.95/4
ECE 6433-501	Introduction to Radar (Distance)	G	Fall 21	9	4	3.1/4
ECE-4433-01	Introduction to Radar	U	Fall 21	4	3	3.2/4
ECE 7000	Directed Individual Study	G	Fall 21	2	0	N/A

Teaching summary for Ali Gurbuz between Fall 2018-Spring 2021

Course Number	Course Title	UG/ Grad	Semester	Enroll -ment	No of Responders	Avg. **out of 5.0**
ECE 4990-601	Mathematical Foundations of Machine learning	U	Spr 21	1	1	4.8 / 5
ECE 4990 /6990-01	Mathematical Foundations of Machine learning	UG	Spr 21	25	18	4.5 /5
ECE 6990- 501	Mathematical Foundations of Machine learning (Distance)	G	Spr 21	4	2	3.8 /5
ECE 7000	Directed Individual Study	G	Spr 21	1	0	N/A
ECE 3443 – 01	Signals and Systems	U	Fall 20	46	45	4.1
FYE 1001-F40	Smart Farming: Data enabled Agriculture	U	Fall 20	10	3	4.1
ECE 7000	Directed Individual Study	G	Spr 20	1	0	N/A
ECE 4990/ 6990-01	Math. Foundations of Machine Learning	UG	Spr 20	33	25	4.3
ECE 4990/ 6990-501	Math. Foundations of Machine Learning	UG	Spr 20	14	8	4.1
ECE 7000	Directed Individual Study	G	Fall 19	1	0	N/A
ECE 8433 – 01	Statistical Signal Processing	G	Fall 19	20	17	4.3
ECE 8433- 501	Statistical Signal Processing	G	Fall 19	4	4	4.6
ECE 3443 – 01	Signals and Systems	U	Spr 19	54	30	3.5
ECE 7000	Directed Individual Study	G	Sum 19	1	0	N/A
ECE 3313 – 01	Electromagnetics I	U	Fall 18	44	40	4.4

Teaching prior to MSU:

Taught Undergraduate classes at TOBB University:

- ELE 201 Circuit Analysis I
- ELE201LCircuit Analysis I Lab
- ELE 202 Circuit Analysis II

- ELE 371 Signals and Systems
- ELE 474 Digital Signal Processing
- ELE 480 Introduction to Estimation
- ELE 495 Undergraduate Project

Taught Graduate classes at TOBB University:

- ELE 465/565 Fundamentals of Radar Signal Processing,
- ELE 571 Detection and Estimation (established and offered first time at the university)
- ELE 670 Radar Signal Processing (established and offered first time at the university)
- ELE 675 Array Signal Processing (established and offered first time at the university)
- ELE 576 Special Problems

Graduate Student Advising

Supervised Graduate Students At MSU:

Since 2018, I have served as the major Professor for **8 Ph.D. and 8 M.S. student** and **graduated 1 Ph.D. (Spring 2022) and 7 M.S. students.** I have **mentored 1 postdoctoral researcher**. In addition, I have participated as contributing member on over 40 graduate committees for Ph.D. or MS students.

@MSU	Graduated	Current
PhD (Major Prof.)	1	7
MS (Major Prof. – Thesis)	5	1
MS (Major Prof. – Non Thesis)	2	-
MS (Co-Major Prof. – Thesis)	1	-

Postdoctoral Researcher Advising:

- Dr. Volkan Senyurek, Geosystems Research Institute (Spring 2020-2022)

Graduated Students at MSU

Graduated Ph.D. (Major Advisor) (1):

- Robiulhossain Mdrafi, (Spring 2022): Dissertation: Data-Driven Sparse Computational Imaging with Deep Learning

Graduated Masters with Thesis (Major Advisor) (5) :

1. Jan Rainer Jamora (Summer 2021), Thesis: Angular-Dependent Three-Dimensional Imaging Techniques in Multi-Pass Synthetic Aperture Radar
2. Samantha Tidrick (Fall 2021), Thesis: Evaluation of Hyperspectral Band Selection Techniques for Real-Time Applications
3. Benjamin Bartlett, (Spring 2022), Thesis: Recognizing traffic signaling gestures through automotive sensors.
4. Matt Duck, (Spring 2022), Thesis: Analysis and implementation of low fidelity radar-based remote sensing for unmanned aircraft systems
5. Wm. Peyton Johnson, (Fall 2022), Thesis: Assessment of Simulated and Real-world Navigation Performance with Small-Scale Unmanned Ground Vehicles

Graduated Masters with Thesis (Co-Major Advisor) (1):

1. Ben Woo, (Spring 2022), Theis: A Harmonic Radar System for Honey Bee Tracking to Better Understand Colony Collapse Disorder (Co-Major with Dr. John Ball)

Graduated Masters with Non-Thesis (Major Advisor) (2):

1. Bryan N. Lagrone (Spring 2020)
2. Sam McDevitt (Spring 2022)

Current Students at MSU:

Current PhD Students (Major Advisor) (7):

1. Bruce Hicks (Fall 2021 - present)
2. Ahmed Manavi Alam (Fall 2021 - present)
3. Sabyasachi Biswas (Fall 2021 - present)
4. M M Nabi (Fall 2019 - present)
5. Yvette Thomas (Distance PhD) (Fall 2021 - present)
6. Cemre Omer Ayna (Fall 2022 – present)
7. Mohammad Abdus Shahid Rafi (Spring 2023- present)

Current MS with Thesis (Major Advisor) (1):

1. AJ Dahal, (Spring 2023 – present)

PhD and MS Committee Memberships:

PhD Committee Member for the following students: (18 Current, 6 Graduated)

Current	Graduated
• Simegnew Yihunie Alaba	• Aly Sabri Abdalla
• Keith Powell	• Dylan Boyd
• Mehedi Farhad	• James William Earnest
• Mohammad Abdus Shahid Rafi	• Emin Ucer (Univ. Of Alabama)
• M M Nabi	• Robiulhossain Mdrafi
• Sk Samiul Reza	• Orhan Eroglu
• Walaa Qiwder	• Tingjun Lei
• Assafi Mohammad Nafe	• Yang Jing
• Randal B. Roberts	• John Rogers
• Eric O'Sullivan	
• Uduka Amogu Johnson	
• Bruce Hicks	
• Ahmed M. Alam	
• Cemre O. Ayna	
• Sabyasachi Biswas	

MS Committee Member for the following students: (4 Current, 20 Graduated)

Current	Graduated	
• AJ Dahal	• Wesley Yarger	• Benjamin Bartlett
• Iffat Ara Ebu	• Samuel McDevitt	• Matt Duck
• Luke Redwine	• Caleb M Merchant	• Wm. Peyton Johnson
• Michael E. Newman	• Dylan Sewell,	• Timoth E Foster
	• Eric David Farmer	• William Carroll
	• Mia Schneider	• Bryan N. Lagrone
	• Preston Peranich	• Jan Rainer Jamora
	• Austin Flyint	• Samantha Tidrick
	• Aaron Umram	
	• Asil Syed	
	• Milton Lewis	
	• Ben Woo	

Supervised and Graduated Students Prior To MSU:

Graduated Students at TOBB University: Prior to MSU I have graduated 7 Masters students with Thesis.

1. İhsan İlhan, MS, 2016. Masters Thesis: "Compressive Sensing Based High Resolution Radar Stretch Processing"
2. Coskun Aydemir, MS, 2015. Masters Thesis: "Effect of two tone transmit signal on nonlinear junction detection performance"
3. Mert Can Aktas, MS, 2014. Masters Thesis: "Comprehensive method for pulse repetition interval modulation recognition for electronic support systems"
4. Arif Ataman, MS, Dec 2012. Masters Thesis: "Development of a through the wall imaging radar prototype"
5. Celalettin Karakus, MS, Apr 2013 Masters Thesis: "Investigation of the impact of compressive sensing on the energy dissipation and lifetime of wireless sensor networks"
6. Muhammed Duman, MS, Dec 2012. Masters Thesis: "Performance analysis of subsurface/through the wall imaging techniques and improvement methods."
7. M. Ali Çağrı Tuncer, MS, Aug 2011. Masters Thesis: "Solutions to the problems of sparsity enhanced subsurface imaging for stepped frequency GPRs."

Capstone & Undergraduate Student Advising

Since 2018, I have served as the supervisor for 17 undergraduate research students, who conducted research projects supported through mostly external funding. Out of these undergraduate students 6 of them continued graduate studies (MS and PhD) under my supervision. In addition, I have served as the supervisor for 7 capstone projects (total of 35 undergraduate students). Advisees are listed below:

Undergraduate Researchers Funded and Supervised:

- Victor Gonzales (Fall 23 -)
- Jacob Taylor (Fall 23-)
- Cale Taylor (Fall 23 -)
- Shayne Ford, (Fall 22 – Spring 23).
- Ajaya Dahal , (Summer-Fall 2022) - Continued to Masters at MSU
- Nathan Goyette, (Summer 2021-Fall 2021)
- Diffey, John (Fall 2021 – Fall 2022)
- Appel, Daegan (Fall 2021 – Fall 2022)
- Matt Duck (2018-2020) – Continued to Masters at MSU
- Benjamin Martlett (2018-2020) - Continued to Masters at MSU
- Michael Dollar (2019-2020)
- Seth Barger (2019-2020)
- Peyton Johnson (2019-2020) - Continued to Masters at MSU
- Kevin Liao (2020)
- Bidhan Bashyal (2020)
- Bruce Hicks (2018-2019) - Continued to PhD at MSU
- Jan R. Jamora (2018-2019) - Continued to Masters at MSU

CAPSTONE Project Advising:

- David Lock, Joseph Taylor, Austin Polk, Marlon Sims, Logan Dubuisson "Bravo Builders", 2023
- Jacob Moore, Justin Herndon, Vignesh Raja, Scott Hoerchler, Harrison Welch, "The Land Ordnance Termination Unmanned System (L.O.T.U.S.)", 2022
- Katherine Ardoin, Wes Hamlin, Brad Hamlin, Logan Johnson, Tyler Trege, "Beatwave: Design of a low cost EEG Device", 2022
- Leasha Godbolt, S. Yasin, L. Anthony, W. Rashad, T. Woodbery, "OvenMax", 2021
- Gabe Wiggins, Bruce Hicks, Braden Duke, Brandon Heron, "Flying Livestock Inventory Registrar" 2019
- Ben Bartlett, T. Phung, T. Welch, W. Wheeler, "PlantBot" 2019

- M. Russell, K. Splillers, A. Tew, L. Baioni, "LYRA - The Proactive Forklift Safety System - Improving Workplace Welfare" 2019
- K. Marcrum, B. Hartley, N. Johnson, J. Lang, J. Nguyen, "Cornhole" 2018

Student Supervisee Fellowships & Awards:

- Peyton Johnson was awarded $1,448 for 2019 Honors Summer Research Fellowship for the research titled "*Autonomous Vehicle Ability Assessment for Obstacles in Complex Terrains Through Sensor Fusion*"
- Ben Bartlett was awarded MSU Honors college undergraduate research fellowship for an amount of $2,500 during Fall 2019/Spring 2020 for the project "Gesture Recognition and Spectrogram Analysis of Radar Data"
- Ben Woo was awarded Science, Mathematics, and Research for Transformation (SMART) Scholarship for graduate studies.
- Samantha Tidrick Science, Mathematics, and Research for Transformation (SMART) Scholarship for graduate studies.
- Bidhan Bashyal awarded the Bagley College of Engineering Undergraduate Research Award, for an amount of $1250 in 2020.
- Matt Duck was awarded the National Science Foundation (NSF) Scholarship for Service in November 2020.

Service and Professional Activities

University Service:

At MSU:

- Member, MSU ECE Strategic Planning Committee (2021)
- Member, MSU ECE Undergraduate Committee (2018- ongoing)
- Member, Signal Processing and Machine Learning Emphasis Group (Sep. 1, 2018 - ongoing).
- Member, MSU ECE Lab/Computer Planning Committee (2018 - 2021)

Prior to MSU:

- Vice Chair of TOBB ETU EE Department (2012-2014)
- TOBB ETU university publicity board Member (2009-2014)
- TOBB ETU EE Department graduate student committee member (2012-2016)
- Volunteer to visit companies participating in TOBB ETU Coop. Education Program (2009-2016)

Society Memberships:

- Senior Member, Institute of Electrical and Electronics Engineers, IEEE
- Member, IEEE Signal Processing Society
- Member, IEEE Geoscience and Remote Sensing Society
- Member, IEEE Aerospace and Electronic Systems Society
- Member, IEEE Vehicular Technology Society Membership
- Elected Member, IEEE Computational Imaging Technical Committee

Journal Editorships:

- Guest Editor, IEEE JSTARS, Special Issue on "Integrated Sensing and Communications for Geoscience and Remote Sensing, 2023
- Associate Editor, Frontiers in Signal Processing, Radar Signal processing, 2022-present
- Guest Editor, Remote Sensing, Special Issue: Crop Yield Estimation through Remote Sensing Data 2022
- Guest Editor, Remote Sening, Special Issue "Pattern Recognition and Image Processing for Remote Sensing", 2020
- Associate Editor, Physical Communications, (2018 - 2021)
- Associate Editor, EURASIP Journal on Advances in Signal Processing (JASP) (2015 –2018)
- Guest Editor, EURASIP Journal on Advances in Signal Processing (JASP) Special Issue on "Advanced Techniques for Radar Signal Processing", 2016

- Associate Editor, Digital Signal Processing (2013- 2016)
- Associate Editor, Turkish Journal of Electrical Engineering and Computer Science (2011-2012)

Conference Organization and Program Committees:

- Technical Track Lead for Sonar Signal/Image Processing and Communications, OCEANS 2023
- Special Session Organizer, IEEE IGARSS 2023
- Special Session Organizer, IEEE Asilomar Conference, 2022
- Elected IEEE Computational Imaging Technical Committee Member (2021)
- Session Chair, Asilomar 2021 Conference, Session: Applications of Machine Learning, 2021
- Session Chair, 2019 IEEE Data Science Workshop (DSW)
- Program Committee Member: SPIE Defense and Commercial Sensing - Big Data: Learning, Analytics, and Applications", (2020-)
- Program Committee Member, "SPIE Conference on Compressive Sensing VII: From Diverse Modalities to Big Data Analytics", (2018-2019)
- Scientific Committee Member, "Compressed Sensing Theory and its Applications to Radar, Sonar and Remote Sensing (CoSeRa)" (2012-2018)
- Technical Program Committee Member for IEEE Signal Processing and Communications Applications Conference, (2011 - 2015)

Panelist/Project Reviewer:

- Member of the Panel on Assessment of Electromagnetic Spectrum Science (EMSS) for The National Academies of Sciences, Engineering, and Medicine, 2023
- NSF Panelist on several ECCS & IIS panels 2022
- DoD SMART Scholarship Evaluator 2022
- MSU Graduate Research Student Symposium Judge - 2021
- NSF Graduate Research Fellowship Panelist 2021,2022
- NSF Communications, Circuits, and Sensing-Systems (CCSS) Panelist 2021
- MSU teaching Assistant Evaluator (2019,2020)
- NSF Communications, Circuits, and Sensing-Systems (CCSS) Panelist 2018
- Project reviewer: TUBITAK Industrial R&D Projects Grant Program for companies
- Project reviewer for TUBİTAK 1001 and Career Project Panels
- Turkish Ministry of Science, Industry, and Technology innovation project panels

Invited Talks:

- Univ. of Alabama ECE Seminars: "Learning to Sense: Task Oriented Data Driven Inference" Feb 2021
- Mississippi State Univ. ECE Seminars: "Compressive Sensing Meets Machine Learning" Nov 2020
- Temple University College of Engineering, Spring Seminar Series, "Learning to Sense: Task Oriented Data Driven Inference", April 6, 2022
- IEEE Mississippi Section, From Big Data to Smart Data: Learning to Acquire Task Driven Measurements, 22 July 2022
- Georgia Tech Center for Signal and Image Processing (CSIP), "Off The Grid Sparse Reconstruction", Nov 6, 2018
- The University of Alabama ECE Graduate Research Seminar "From Satellites to Drones: Machine Learning Based Remote Sensing with Opportunistic Signals", September 14, 2022

Reviewer: (2018-)

For Following Journals:

- IEEE Journal of Selected Topics in Signal Processing
- IEEE Sensors Journal
- IEEE Signal Processing Letters
- IEEE Transactions on Computational Imaging
- IEEE Transactions on Pattern Analysis and Machine Intelligence
- IEEE Transactions on Aerospace and Electronic Systems
- IEEE Transactions on Wireless Communications
- IEEE Transactions on Geoscience and Remote Sensing,

- IEEE Geoscience and Remote Sensing Magazine
- IEEE Transactions on Intelligent Systems and Technology
- IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing,
- IEEE Transactions on Geosciences Remote Sensing,
- MDPI Remote Sensing

For Following Conferences:

- IEEE International Geoscience and Remote Sensing Symposium (IGARSS)
- IEEE Radar Conference (RADARCON)
- IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)
- IEEE International Conference on Image Processing (ICIP)
- IEEE Asilomar Conference on Signals, Systems, and Computers

ADDITIONAL

LANGUAGES:

- Turkish (Native), English

STATUS:

- US Citizen

REFERENCES

Prof. Dr. James H. McClellan
School of Electrical and Computer Eng. Georgia Institute of Technology
Atlanta, GA 30332-0360
Email: jim.mcclellan@gatech.edu
Telephone: **(**404) 894-8325
Retired – PhD Advisor

Prof. Dr. Waymond R. Scott
School of Electrical and Computer Engineering
Georgia Institute of Technology
Atlanta, GA 30332-0250
Email: waymond.scott@ece.gatech.edu
Telephone: (404) 894-3048

Prof. Dr. Bedri Cetiner
Dept. of Electrical and Computer Eng.
Utah State University
Logan, UT 84322
Email: bedri.cetiner@usu.edu
Telephone: (435) 797-3320

Assoc. Prof. Dr. Mehmet Kurum
Dept. of Electrical and Computer Eng.
Mississippi State University
Starkville, MS, 39762
Email: kurum@ece.msstate.edu
Telephone: 662-325-2148

Prof. Dr. Ismail Guvenc
Dept. of Electrical and Computer Eng.
North Carolina State University
Raleigh, NC 27606
Email: iguvenc@ncsu.edu
Telephone: 919-515-5253

Prof. Dr. Moeness Amin
Dept. of Electrical and Computer Eng.
Villanova University
Villanova, PA 19085
Email: moeness.amin@villanova.edu
Telephone: (610) 519-4263