



## AHMET M. ELBIR

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Personal Website, Google Scholar Page

Dec 2024

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### RESEARCH INTERESTS

**Array Signal Processing:** Antenna Array Design and Calibration, Direction-of-Arrival Estimation, Mutual Coupling, Gain/Phase Mismatch & Multipath, Sparse Signal Recovery

**Wireless Communications:** Millimeter-Wave and Terahertz Communications, Channel Estimation, Analog/Digital Beamforming, Array Design and Calibration, Intelligent Reflecting Surfaces, Beam Squint Compensation, Antenna Selection, Joint Radar-Communications Design, Manifold Optimization, Sparsity-driven Techniques

**Machine Learning:** Supervised/Federated/Transfer/Online Learning Techniques for Radar Signal Processing and Wireless Communications

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### PROFESSIONAL EXPERIENCE

- **Associate Professor:** Istinye University, Turkey, 2024 - Present.  
*Research on signal processing and wireless communications*
  - **Research Fellow:** King Abdullah University of Science and Technology, KSA, 2023 - Present.  
*Research on integrated sensing and communications*
  - **Postdoctoral Researcher:** Carleton University, Canada, 2022 - 2023.  
*Research on distributed learning for massive MIMO design*
  - **Research Fellow:** University of Hertfordshire, UK, 2021 - 2024.  
*Research on mmWave massive MIMO*
  - **Research Fellow:** University of Luxembourg, Luxembourg, 2021 - Present.  
*Research on mmWave/THz communications, integrated sensing and communications*
  - **Visiting Postdoctoral Researcher:** Koc University, Turkey, 2020 - 2021.  
*Research on distributed learning for massive MIMO and vehicular networks*
  - **Senior Researcher:** Duzce University, Turkey, 2016 - 2023.  
*Research on array signal processing*
  - **Research Consultant:** ATARGET Informatics and Defense, Turkey, 2014 - 2017.  
*Academic consultant on direction finding and signal recovery*
  - **Research Assistant:** Middle East Technical University, Turkey, 2011 - 2016.  
*Research on array signal processing*
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### EDUCATION

- **Ph.D in Electrical and Electronics Engineering**  
Middle East Technical University (METU), Turkey, 2011-2016.  
*Dissertation: Direction Finding in The Presence of Array Imperfections, Model Mismatches and Multipath*  
[METU Best Thesis Award]
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- **B.S. in Electrical and Electronics Engineering**  
Firat University, Turkey, 2005-2009.  
Bialystok Technical University, Poland, 2008-2009, visiting student.  
*Senior Project: Design and Control of An Inverted Pendulum*

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## RESEARCH PROJECTS

- TERRAMETA: Terahertz Reconfigurable Metasurfaces for ultra-high rate wireless communications, EU H2020, 2023-2026, Researcher at University of Luxembourg.
- M-MIMO Channel Estimation using Distributed Machine Learning and Edge Computing Technologies, Ericsson, 2022-2023, Researcher at Carleton University.
- SPRINGER: Signal Processing for Next Generation Radar, FNR, 2022-2023, Researcher at University of Luxembourg.
- AGNOSTIC: Actively Enhanced Cognition based Framework for Design of Complex Systems, ERC H2020, 2020-2023, Researcher at University of Luxembourg.
- CONNECT: COmmunicatioN-aware dyNamic Edge CompuTing, EU-CHIST-ERA, 2020-2021, Researcher at Koc University.
- Algorithm Development for Direction, Position and Signal Estimation, 2015-2017, Research Consultant to ATARGET Informatics in cooperation with SDT Space and Defense Technologies.
- Algorithm Development for Direction Finding, 2014-2015, Research Consultant to ATARGET Informatics in cooperation with TUBITAK (Turkish National Research Council) BILGEM.

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## AWARDS

- IEEE Turkey Section Research Encouragement Award, 2022.
- IET Premium Award for Best Paper, 2021.
- METU Best Ph.D Thesis Award, 2017.

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## PUBLICATIONS

- **Published Research Papers**

49. A. M. Elbir, O. T. Demir, K. V. Mishra, S. Chatzinotas, M. Haardt, "**Near-Field Signal Processing: Unleashing the Power of Proximity**", IEEE Signal Processing Magazine [Preprint]
48. A. M. Elbir, A. Celik and A. M. Eltawil, "**Hybrid Beamforming for Integrated Sensing and Communications With Low Resolution DACs**", IEEE Wireless Communications Letters [Full Paper]
47. A. M. Elbir, K. V. Mishra, S. Chatzinotas, M. Bennis, "**Terahertz-Band Integrated Sensing and Communications: Challenges and Opportunities**", IEEE Aerospace and Electronic Systems Magazine, vol. 39, no. 12, pp. 38-49, Dec. 2024 [Preprint] [Full Paper]
46. A. M. Elbir, A. Celik, A. M. Eltawil and M. G. Amin, "**Index Modulation for Integrated Sensing and Communications: A Signal Processing Perspective**", IEEE Signal Processing Magazine, vol. 41, no. 5, pp. 44-55, Sept. 2024, doi: 10.1109/MSP.2024.3444195 [Preprint] [Full Paper]
45. A. M. Elbir, K. V. Mishra, A. Celik and A. M. Eltawil, "The Curse of **Beam-Squint in ISAC**: Causes, Implications, and Mitigation Strategies", IEEE Communications Magazine, vol. 62, no. 9, pp. 52-58, September 2024 [Preprint] [Full Paper]

44. A. M. Elbir, A. Abdallah, A. Celik and A. M. Eltawil, "Antenna Selection With Beam Squint Compensation for **Integrated Sensing and Communications**", IEEE Journal of Selected Topics in Signal Processing, vol. 18, no. 5, pp. 857-870, July 2024 [Preprint]
43. A. M. Elbir, K. V. Mishra, A. Abdallah, A. Celik and A. M. Eltawil, "Spatial Path **Index Modulation** in mmWave/THz-Band **Integrated Sensing and Communications**", IEEE Transactions on Wireless Communications, vol. 23, no. 9, pp. 10788-10802, Sept. 2024 [Preprint] [Full Paper]
42. A. M. Elbir, A. Celik and A. M. Eltawil, "NEAT-MUSIC: Auto-calibration of **DOA Estimation** for **Terahertz-Band** Massive MIMO Systems", IEEE Wireless Communications Letters, vol. 13, no. 2, pp. 451-455, Feb. 2024 [Preprint] [Full Paper]
41. A. M. Elbir, K. V. Mishra and S. Chatzinotas "Terahertz-Band **Direction Finding** With Beam-Split and **Mutual Coupling** Calibration", IEEE Antennas and Wireless Propagation Letters, vol. 22, no. 11, pp. 2720-2724, Nov. 2023, doi: 10.1109/LAWP.2023.3313350 [Preprint] [Full Paper]
40. Li Wei, Chongwen Huang, George C. Alexandropoulos, Ahmet M. Elbir, Zhaohui Yang, Zhaoyang Zhang, Marco Di Renzo, Merouane Debbah, Chau Yuen, "Wireless Communications Empowered by **Reconfigurable Intelligent Surfaces**: Model-Based vs Model-Free **Channel Estimation**". Journal of Information and Intelligence, 1(3), 253–266. doi: 10.1016/j.jiixd.2023.06.010. [Full Paper]
39. A. M. Elbir, W. Shi, A. K. Papazafeiropoulos, P. Kourtessis, and S. Chatzinotas, "Near-Field **Terahertz Communications**: Model-Based and Model-Free Channel Estimation", IEEE Access, vol. 11, pp. 36409-36420, 2023 [Full Paper]
38. A. K. Papazafeiropoulos, A. M. Elbir, P. Kourtessis, I. Krikidis and S. Chatzinotas, "Cooperative **RIS and STAR-RIS** assisted mMIMO Communication: Analysis and Optimization", IEEE Transactions on Vehicular Technology, vol. 72, no. 9, pp. 11975-11989, Sept. 2023, doi: 10.1109/TVT.2023.3264724 [Full Paper]
37. A. M. Elbir, Wei Shi, A. K. Papazafeiropoulos, P. Kourtessis, and S. Chatzinotas, "Terahertz-Band Channel and **Beam Split** Estimation via Array Perturbation Model", IEEE Open Journal of Communications Society, vol. 4, pp. 892-907, 2023, doi: 10.1109/OJCOMS.2023.3263625. [Preprint] [Full Paper]
36. A. M. Elbir, K. V. Mishra, S. Vorobyov and R. W. Heath, "Twenty-Five Years of Advances in **Beamforming**: From **Convex and Non-Convex Optimization** to Learning Techniques", IEEE Signal Processing Magazine, vol. 40, no. 4, pp. 118-131, June 2023 [Preprint] [Full Paper]
35. A. M. Elbir, "A Unified Approach for **Beam-Split** Mitigation in Wideband THz **Hybrid Beamforming**", IEEE Transactions on Vehicular Technology, vol. 72, no. 9, pp. 12355-12360, Sept. 2023, doi: 10.1109/TVT.2023.3265395 [Preprint] [Full Paper]
34. A. M. Elbir and S. Chatzinotas, "BSA-OMP: **Beam-Split-Aware** Orthogonal Matching Pursuit for **Terahertz-Band** Channel Estimation", IEEE Wireless Communications Letters, vol. 12, no. 4, pp. 738-742, April 2023, doi: 10.1109/LWC.2023.3242699 [Preprint] [Full Paper]
33. A. M. Elbir, K. V. Mishra, M. R. B. Shankar and S. Chatzinotas, "The Rise of **Intelligent Reflecting Surfaces** in **Integrated Sensing and Communications** Paradigms", IEEE Network [Preprint] [Full Paper]
32. A. Papazafeiropoulos, C. Pan, A. M. Elbir, V. Nguyen, P. Kourtessis, S. Chatzinotas, "Asymptotic Analysis of Max-Min Weighted SINR for **IRS-Assisted MISO** Systems with **Hardware Impairments**", IEEE Wireless Communications Letters, vol. 12, no. 2, pp. 192-196, Feb. 2023 [Full Paper]

31. A. M. Elbir and K. V. Mishra, "Cognitive **Learning**-Aided **Multi-Antenna** Communications", IEEE Wireless Communications, vol. 29, no. 6, pp. 136-143, Dec 2022 [Preprint] [Full Paper]
30. A. M. Elbir, G. Gurbilek, B. Soner, A. K. Papazafeiropoulos, P. Kourtessis and S. Coleri, "**Vehicular Networks** for Combating A Worldwide **Pandemic**: Preventing the Spread of COVID-19", Smart Health, vol. 26, 1 Dec. 2022, p. 100353 [Preprint] [Full Paper]
29. A. M. Elbir, S. Coleri, A. K. Papazafeiropoulos, P. Kourtessis and S. Chatzinotas, "A **Hybrid** Architecture for **Federated and Centralized Learning**", IEEE Transactions on Cognitive Communications and Networking, vol. 8, no. 2, pp. 642-656, June 2022. [[Preprint][Full Paper]
28. A. M. Elbir, A. K. Papazafeiropoulos, and S. Chatzinotas, "**Federated Learning** for Physical Layer Design", IEEE Communications Magazine, vol. 59, no. 11, pp. 81-87, November 2021 [Preprint] [Full Paper]
27. A. M. Elbir, K. V. Mishra and S. Chatzinotas, "**Terahertz-Band** Joint Ultra-Massive MIMO **Radar-Communications**: Model-Based and Model-Free Hybrid Beamforming", IEEE Journal of Selected Topics in Signal Processing, vol. 15, no. 6, pp. 1468-1483, Nov. 2021,. [Preprint] [Full Paper]
26. A. M. Elbir, K. V. Mishra, M. R. B. Shankar and B. Ottersten, "A Family of **Deep Learning** Architectures for **Channel Estimation** and **Hybrid Beamforming** in Multi-Carrier mm-Wave Massive MIMO", IEEE Transactions on Cognitive Communications and Networking, vol. 8, no. 2, pp. 642-656, June 2022 [Preprint] [Full Paper]
25. A. M. Elbir and S. Coleri, "**Federated Learning** for Channel Estimation in Conventional and IRS-Assisted **Massive MIMO**", IEEE Transactions on Wireless Communications, vol. 21, no. 6, pp. 4255-4268, June 2022 [Preprint] [Full Paper]
24. W. Hou, J. Sun, G. Gui, T. Ohtsuki, A. M. Elbir, H. Gacanin, and H. Sari, "**Federated Learning** for DL-CSI Prediction in **FDD Massive MIMO** Systems", IEEE Wireless Communications Letters, vol. 10, no. 8, pp. 1810-1814, Aug. 2021 [Full Paper]
23. A. M. Elbir and K. Vijay Mishra, "**Sparse Array Selection** Across Arbitrary Sensor Geometries with Deep **Transfer Learning**", IEEE Transactions on Cognitive Communications and Networking, vol. 7, no. 1, pp. 255-264, March 2021. [Preprint][Full Paper]
22. A. Papazafeiropoulos, C. Pan, A. M. Elbir, P. Kourtessis, S. Chatzinotas, J. M. Senior, "Coverage Probability of **Distributed IRS** Systems Under Spatially Correlated Channels", IEEE Wireless Communications Letters, vol. 10, no. 8, pp. 1722-1726, Aug. 2021 [Preprint]
21. T. Mir, M. Waqas, U. Mir, S. Mudassir, A. M. Elbir and S. Tu, "**Hybrid Precoding** Design for Two-Way Relay-Assisted Terahertz Massive MIMO Systems," IEEE Access, vol. 8, pp. 222660-222671, 2020, doi: 10.1109/ACCESS.2020.3044907 [Full Paper]
20. A. M. Elbir and S. Coleri, "**Federated Learning** for **Hybrid Beamforming** in mm-Wave Massive MIMO", IEEE Communications Letters, vol. 24, no. 12, pp. 2795-2799, Dec. 2020, doi: 10.1109/LCOMM.2020.3019312. [Preprint] [Full Paper]
19. A. M. Elbir, "A **Deep Learning** Framework For Hybrid Beamforming Without Instantaneous **CSI Feedback**", IEEE Transactions on Vehicular Technology, vol. 69, no. 10, pp. 11743-11755, Oct. 2020, doi: 10.1109/TVT.2020.3017652. [Preprint] [Full Paper]
18. A. M. Elbir, A. Papazafeiropoulos, P. Kourtessis, and S. Chatzinotas, "Deep Channel Learning For **Large Intelligent Surfaces** Aided mm-Wave Massive MIMO Systems", IEEE Wireless Communications Letters, vol. 9, no. 9, pp. 1447-1451, Sept. 2020. [Preprint] [Full Paper]

17. A. M. Elbir, "**DeepMUSIC**: Multiple Signal Classification via Deep Learning", IEEE Sensors Letters, vol. 4, no. 4, pp. 1-4, April 2020. [Preprint] [Full Paper] [**Among Top 5 Downloaded Papers in 2020-2025**]
16. A. M. Elbir and K. V. Mishra, "Joint **Antenna Selection and Hybrid Beamformer** Design using Unquantized and Quantized Deep **Learning Networks**", IEEE Transactions on Wireless Communications, vol. 19, no. 3, pp. 1677-1688, March 2020. [Preprint] [Full Paper]
15. A. M. Elbir and A. Papazafeiropoulos, "**Hybrid Precoding** for Multi-User Millimeter Wave Massive MIMO Systems: **A Deep Learning Approach**," IEEE Transactions on Vehicular Technology, vol. 69, no. 1, pp. 552-563, Jan. 2020. [Preprint] [Full Paper]
14. A. M. Elbir, "**CNN-based Precoder and Combiner** Design in mmWave MIMO Systems", IEEE Communications Letters, vol. 23, no. 7, pp. 1240-1243, July 2019. [Full Paper]
13. A. M. Elbir, Kumar Vijay Mishra and Yonina C. Eldar, "**Cognitive Radar** Antenna Selection via Deep Learning", IET Radar, Sonar & Navigation, 2019, 13, (6), p. 871-880. [Full Paper] [**IET Premium Award**]
12. A. M. Elbir, "L-Shaped **Coprime Array** Structures For DOA Estimation", Multidimensional Systems and Signal Processing, 31(1), 205-219, 2020. [Full Paper]
11. A. M. Elbir, "**2-D DOA Estimation** via Shifted Sparse Arrays With Higher Degrees of Freedom", Circuits, Systems and Signal Processing, 38(12), 5549-5575, 2019. [Full Paper]
10. A. M. Elbir, "**V-Shaped Sparse Arrays** For 2-D DOA Estimation", Circuits, Systems and Signal Processing, 38, 2792–2809, 2019. [Full Paper]
9. A. M. Elbir, "**Sensor Array Calibration** With Joint-Block-Sparsity In The Presence of Multiple Separable Observations", Signal, Image and Video Processing, Volume 13, Issue 5, pp 905–913, July 2019. [Full Paper]
8. Ahmet M. Elbir, "**Joint-Block-Sparsity** For Efficient **2-D DOA Estimation** With Multiple Separable Observations", Multidimensional Systems and Signal Processing, 30(4), 1659-1669, 2019. [Full Paper]
7. Elbir, A. M. "**Coprime Arrays** With Enhanced Degrees of Freedom" Anadolu University Journal of Science and Technology A- Applied Sciences and Engineering, (), 1-1. DOI: 10.18038/aubtda.330973
6. A. M. Elbir, "Calibration of **Directional Mutual Coupling** For Antenna Arrays", Digital Signal Processing, Volume 69, Pages 117-126, July 2017.
5. A. M. Elbir, "A Novel Data Transformation Approach for DOA Estimation With **3-D Antenna Arrays** in the Presence of Mutual Coupling," IEEE Antennas and Wireless Propagation Letters, vol. 16, no. , pp. 2118-2121, 2017. doi: 10.1109/LAWP.2017.2699292
4. A. M. Elbir, "Direction Finding in the Presence of **Direction-Dependent Mutual Coupling**," IEEE Antennas and Wireless Propagation Letters, vol. 16, no. , pp. 1541-1544, 2017. doi: 10.1109/LAWP.2017.2647983.
3. A. M. Elbir, T. Engin Tuncer, "**2-D DOA and mutual coupling coefficient estimation** for arbitrary array structures with single and multiple snapshots, Digital Signal Processing, Volume 54, Pages 75-86, July 2016.
2. A. M. Elbir, T. Engin Tuncer, "Far-field DOA estimation and **near-field localization** for multipath signals," Radio Science, 49, 9, Pages 765-776, 2014.

1. A. M. Elbir, T. Engin Tuncer, "Calibration of antenna arrays for aeronautical vehicles on ground," *Aerospace Science and Technology*, Volume 30, Issue 1, Pages 18-25, October 2013.
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## Conference Papers

38. A. M. Elbir, A. Abdallah, A. Celik and A. M. Eltawil, "Joint Antenna and Spatial Path Index Modulation for THz Integrated Sensing and Communications", *GLOBECOM 2024 - 2024 IEEE Global Communications Conference*, Cape Town, South Africa, Dec, 2024.
37. S. Tripathi, A. M. Elbir, T. Sandhan and R. M. Hegde, "DoA Estimation in RIS-Assisted Network via Element Sampling and Sparse Reconstruction", *3rd International Conference on 6G Networking (6GNet)*, Paris, France, Oct, 2024.
36. A. M. Elbir, K. V. Mishra, A. Celik and A. M. Eltawil, "Cell-Free Integrated Sensing and Communications With Hybrid Beamforming", *2024 IEEE 25th International Workshop on Signal Processing Advances in Wireless Communications (SPAWC)*, Lucca, Italy, Sep, 2024
35. A. M. Elbir, A. Abdallah, A. Celik and A. M. Eltawil, "Sparse Array Design for ISAC in the Presence of Beam-Squint", *2024 6th International Conference on Communications, Signal Processing, and their Applications (ICCSPA)*, Istanbul, 8-11 July, 2024
34. A. M. Elbir, K. V. Mishra, A. Celik and A. M. Eltawil, "Near-field Automotive Joint Radar-Communications With Spatial Path Index Modulation", *IEEE Sensor Array and Multichannel Signal Processing Workshop (SAM 2024)*, Oregon, USA, 8-11 July 2024
33. A. M. Elbir, A. Abdallah, A. Celik and A. M. Eltawil, "Spatial Path Index Modulation To Combat Beam-Squint Effect in THz-ISAC Systems", *2024 IEEE Wireless Communications and Networking Conference (WCNC)*, Dubai, United Arab Emirates, April, 2024.
32. A. M. Elbir, K. V. Mishra and S. Chatzinotas, "Spherical Wavefront Near-Field DoA Estimation in THz Automotive Radar", *2024 18th European Conference on Antennas and Propagation (EuCAP)*, Glasgow, Scotland, March, 2024.
31. A. M. Elbir, A. Celik and A. M. Eltawil, "Near-field Hybrid Beamforming for Terahertz-band Integrated Sensing and Communications", *2023 IEEE Globecom Workshops (GC Wkshps)*, Kuala Lumpur, Malaysia, 2023. [Preprint]
30. A. M. Elbir, K. V. Mishra and A. C. Gurbuz, "Deep Sparse Array Design for Integrated Sensing and Communications", *2023 IEEE International Radar Conference (RADAR)*, Sydney, Australia, Nov 2023.
29. A. M. Elbir, Wei Shi, K. V. Mishra and S. Chatzinotas, "Federated Multi-Task Learning for THz Wideband Channel and DoA Estimation", *2023 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Rhode Islands, Greece, June 2023. [Preprint]
28. A. M. Elbir, Wei Shi, K. V. Mishra, A. K. Papazafeiropoulos and S. Chatzinotas, "Implicit Channel Learning for Machine Learning Applications in 6G Wireless Networks", *2023 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Rhode Islands, Greece, June 2023. [Preprint]
27. A. M. Elbir and K. V. Mishra, "Machine Learning Techniques for Terahertz Channel Estimation", *URSI GASS 2023*, Sapporo, Japan, 19 – 26 August 2023
26. A. M. Elbir, K. V. Mishra and S. Chatzinotas, "NBA-OMP: Near-field Beam-Split-Aware Orthogonal Matching Pursuit for Wideband THz Channel Estimation", *2023 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Rhode Islands, Greece, June 2023. [Preprint]

25. A. M. Elbir, K. V. Mishra, A. Celik, A. M. Eltawil, "Millimeter-Wave Radar Beamforming with Spatial Path Index Modulation Communications", 2023 IEEE Radar Conference (RadarConf), San Antonio, Texas, USA, 2023 [Preprint]
24. A. M. Elbir, B. Soner, S. Coleri, D. Gunduz, M. Bennis, "Federated Learning for Vehicular Networks", 2022 IEEE International Mediterranean Conference on Communications and Networking (MeditCom), 2022. [Preprint]
23. A. M. Elbir, S. Coleri and K.V. Mishra, "Federated Channel Learning for Intelligent Reflecting Surfaces With Fewer Pilot Signals", 2022 IEEE Sensor Array and Multichannel Signal Processing Workshop (SAM), 2022.
22. A. M. Elbir, K. V. Mishra and S. Chatzinotas, "Hybrid Beamforming for Terahertz Joint Ultra-Massive MIMO Radar-Communications", 2021 17th International Symposium on Wireless Communication Systems (ISWCS), 2021 - Special Session - Joint Communications and Sensing Systems.
21. A. M. Elbir, S. Coleri and K. V. Mishra, "Hybrid Federated and Centralized Learning", 2021 European Signal Processing Conference (EUSIPCO), 2021. [Preprint]
20. A. M. Elbir, S. Coleri and K. V. Mishra, "Federated Dropout Learning for Hybrid Beamforming With Spatial Path Index Modulation In Multi-User mmWave-MIMO Systems", 2021 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Toronto, Canada, June 2021 [Preprint]
19. A. M. Elbir and A Papazafeiropoulos, "Deep Hybrid Precoding for Multi-User mm-Wave Massive MIMO Systems", 2020 27th International Conference on Telecommunications (ICT), June, 2020.
18. A. M. Elbir and Kumar Vijay Mishra, "Low-Complexity Limited-Feedback Deep Hybrid Beamforming for Broadband Massive MIMO Communications", 2020 IEEE 21st International Workshop on Signal Processing Advances in Wireless Communications (SPAWC), Atlanta, GA, USA, 2020
17. Ahmet M. Elbir and Kumar Vijay Mishra, "Robust Hybrid Beamforming With Quantized Deep Neural Networks," IEEE International Workshop on Machine Learning for Signal Processing (MLSP), Pittsburgh, PA, USA, 2019.
16. Ahmet M. Elbir, Satish Mulleti, Regev Cohen, Rong Fu and Yonina C. Eldar, "Deep-Sparse Array Cognitive Radar", SampTA (Sampling Theory and Applications) Conference, Jun 2019.
15. Ahmet M. Elbir and Kumar Vijay Mishra, "Deep Learning Design for Joint Antenna Selection and Hybrid Beamforming in Massive MIMO", IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting, Atlanta, Georgia, USA, July 2019.
14. Ahmet M. Elbir, Kumar Vijay Mishra and Yonina C. Eldar, "CNN-based cognitive radar array selection," IEEE Radar Conference, 22-26 April 2019, Boston, MA, USA.
13. A. M. Elbir and T. E. Tuncer, "Single Snapshot DOA Estimation in the Presence of Mutual Coupling for Arbitrary Array structures", IEEE Sensor Array and Multichannel Signal Processing Workshop, Rio de Janeiro, Brazil, July 2016.
12. A. M. Elbir and T. E. Tuncer, "Direction finding for arbitrary array structures", Aselsan Information and Communications Workshop, November, 2016.
11. A. M. Elbir and T. E. Tuncer, "Direction finding for arbitrary array structures in the presence of mutual coupling", Graduate Research Workshop, Dept. of Electrical and Electronics Engineering, METU, April, 2016. [**Best Presentation Award**]
10. A. M. Elbir, T. Engin Tuncer, "Compressed Sensing For Single Snapshot Direction Finding In The Presence of Mutual Coupling," IEEE Signal Processing and Communications Applications

Conference (SIU), 2016 24th, Zonguldak, Turkey, 16-19 May 2016.

9. A. M. Elbir, T. Engin Tuncer, "Direction-of-Arrival and Mutual Coupling Coefficient Estimation With A Single Observation For Arbitrary Array Structures," IEEE Signal Processing and Communications Applications Conference (SIU), 2016 24th, Zonguldak, Turkey, 16-19 May 2016.
8. A. M. Elbir and T. E. Tuncer, "Direction finding and localization for far-field sources with near-field multipath reflections," Signal Processing and Signal Processing Education Workshop (SP/SPE), 2015 IEEE, pp. 130-135, Salt Lake City, UT, 2015.
7. A. M. Elbir and T. E. Tuncer, "Source localization with sparse recovery for coherent far- and near-field signals," Signal Processing and Signal Processing Education Workshop (SP/SPE), 2015 IEEE, pp. 124-129, Salt Lake City, UT, 2015.
6. A. M. Elbir and T. E. Tuncer, "Sparse support recovery for DOA estimation in the presence of mutual coupling," Signal Processing Conference (EUSIPCO), 2015 23rd European, pp. 1366-1370, Nice, 2015.
5. A. M. Elbir, T. Engin Tuncer, "Sparse signal recovery for localization of coherent far- and near-field signals," IEEE Signal Processing and Communications Applications Conference (SIU), 2015 23th, pp.899-902, Malatya, Turkey, 16-19 May 2015.
4. A. M. Elbir, T. Engin Tuncer, "Direction finding for far- and near-field sources" National Conference of Defense Technologies, Ankara, Turkey, 25-27 June 2014.
3. A. M. Elbir, T. Engin Tuncer, "Angle and position estimation for far-field and near-field multipath signals," IEEE Signal Processing and Communications Applications Conference (SIU), 2014 22nd, pp.1379-1382, Trabzon, Turkey, 23-25 April 2014.
2. A. M. Elbir and T. E. Tuncer, "Ground calibration of antenna arrays for complex platforms," Phased Array Systems & Technology, 2013 IEEE International Symposium on, pp. 714-718, Waltham, MA, 2013.
1. A. M. Elbir, T. Engin Tuncer, "Ground calibration of antenna arrays for aeronautical vehicles," IEEE Signal Processing and Communications Applications Conference (SIU), 2013 21st, Cyprus, 24-26 April 2013.

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## MISCELLANEOUS

### · Book Chapters

4. A. M. Elbir and W. Shi, "Federated Learning for Wireless Communications", Artificial Intelligence for Future Networks, Wiley-IEEE Press, 2025.
3. A. M. Elbir and S. Chatzinotas, "Beamforming Architectures for Integrated Sensing and Communications in Millimeter-wave and Terahertz", Integrated Sensing and Communications for Future Wireless Networks: Principles, Advances and Key Enabling Technologies, Elsevier, 2024.
2. K. V. Mishra, A. M. Elbir and K. Ichige, "Sparse Array Design for Direction Finding using Deep Learning", Sparse Arrays, Wiley-IEEE Press, 2022. [Preprint]
1. K. V. Mishra, A. M. Elbir, A. I. Zaghoul, "Machine Learning for Metasurfaces Design and Their Applications", in Advances in Electromagnetics Empowered by Machine Learning, D. H. Werner and S. D. Campbell (Eds.), Wiley-IEEE Press, 2022. [Preprint]

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### · Tutorials/Demos



10. A. M. Elbir and K. V. Mishra, "Tutorial: Learning Techniques for mmWave/THz Communications and Sensing", IEEE Sensor Array and Multichannel Signal Processing Workshop (SAM 2024), Oregon, USA, 8-11 July 2024
9. A. M. Elbir and K. V. Mishra, "Tutorial: Learning-Aided mmWave/THz Communications and Sensing", IEEE International Symposium on Dynamic Spectrum Access Networks, Washington, DC, USA, 13-16 May 2024
8. A. M. Elbir and K. V. Mishra, "Tutorial: Learning Methods for Beyond 5G Communications, Localization, and Sensing", IEEE International Conference on Communications, Denver, CO, June USA, 2024.
7. A. M. Elbir and K. V. Mishra, "Tutorial: Deep Learning Techniques for mmWave and THz-Band Radar and Communications", The South African Radar Interest Group (SARIG), South Africa, 2023.
6. A. M. Elbir, "Tutorial: Learning-Based Centralized and Distributed Techniques for mmWave and THz-Band Communications", 2023 IEEE International Black Sea Conference on Communications and Networking, Istanbul, 2023.
5. A. M. Elbir and K. V. Mishra, "Tutorial: Hybrid beamforming for mm-Wave and THz Joint Radar-Communications", IEEE AP-S/URSI Conference, June 2023.
4. A. M. Elbir and K. V. Mishra, "Tutorial: Deep Learning Techniques for Hybrid Beamforming in mmWave and THz-Band Communications and Radar", IEEE International Conference on Communications (ICC) 16–20 May 2022, Seoul, South Korea
3. A. M. Elbir and K. V. Mishra, "Tutorial: Massive and Ultramassive MIMO Hybrid Beamforming for Radar and Communications: Optimization to Deep Learning" 2021 European Signal Processing Conference (EUSIPCO)
2. A. M. Elbir, K. V. Mishra, "Tutorial: Learning-Based Massive MIMO Hybrid Beamforming for Radar and Communications: Tutorial", The 13th International Conference on COMMunication Systems and NETWORKS (COMSNETS), Jan 2021.
1. Satish Mulleti, Regev Cohen, Ahmet M. Elbir, Rong Fu, Moshe Namer, Maxim Meltsin, Harel Moalem, Eli Laks, Eli Shoshan, Tinayao Huang, Yimin Liu, Yonina C. Eldar, "Demo: Deep Sparse Antenna Array Selection And DOA Estimation", International Conference on Acoustics, Speech, and Signal Processing (ICASSP), May 2019

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### · Invited Talks

10. Koc U, "Spatial Path Index Modulation for Integrated Sensing and Communications", 2024
9. International Congress on Human-Computer Interaction, Optimization and Robotic Applications, "Wireless Communications: From Optimization to Learning", 2024.
8. George Washington U, "Introduction to Machine Learning for Communications", 2022.
7. Mississippi State U, "Deep Learning for Radar and Communications", 2022.
6. URSI AP-RASC 2022 on "Deep Learning for Hybrid Beamforming in Joint Radar-Communications", 2022.
5. IEEE Future Networks; Massive MIMO Workshop on "Deep Learning for Wireless Communications", 2021.

4. 2021 International Symposium on Multidisciplinary Studies and Innovative Technologies on "Machine Learning for Wireless Communications", 2021.
  3. Anadolu U on "Deep Learning for Array Signal Processing", 2021.
  2. Nanjing U of Posts and Telecommunications on "Deep learning for physical layer design", 2021.
  1. COMSATS, U Islamabad on "Deep learning-based beamformer design", 2021.
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· **Editorials:**

10. **Associate Editor:** IEEE Wireless Communications Letters, 2023-Present.
  9. **Associate Editor:** IEEE Access, 2019-2023.
  8. **Guest Editor:** IEEE Transactions on Computational Imaging Special Section on Computational Imaging using Synthetic Apertures , 2025
  7. **Lead Guest Editor:** Elsevier Signal Processing Special Issue on Integrated Sensing and Communications, 2024.
  6. **Lead Guest Editor:** IEEE Signal Processing Magazine Special Issue on Near-field Signal Processing: Communications, Sensing and Imaging, Mar 2024
  5. **Lead Guest Editor:** IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing Special Issue on Integrated Sensing and Communications for Geoscience and Remote Sensing, 2024
  4. **Guest Editor:** IEEE Journal of Selected Areas in Sensors Special Issue on Integrated Sensing and Communications for IoT, 2024
  3. **Lead Guest Editor:** IEEE Journal of Selected Topics in Signal Processing Special Issue on Near-Field Signal Processing: Algorithms, Implementations and Applications, 2023
  2. **Lead Guest Editor:** IEEE Wireless Communications Magazine Special Issue on Wireless Communications Over Near-Field Channels, 2023
  1. **Lead Guest Editor:** IEEE Communications Standards Magazine Special Issue on Integrated Sensing and Communications, 2023
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· **Reviewer for the following journals:**

- IEEE TSP, IEEE JSTSP, IEEE SPL, IEEE SPM, IEEE TAP, IEEE TAES, IEEE TRS.
  - IEEE TWC, IEEE JSAC, IEEE TCOM, IEEE TCCN, IEEE ComMag, IEEE WCM, IEEE OJCOMS, IEEE IoTJ.
  - IEEE WCL, IEEE COMML, IEEE AWPL, IEEE Access, Elsevier SP, Elsevier DSP.
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· **Technical/Organizing Committee Member for the following Conferences:**

- CAMSAP, 2023.
- GlobeCom, 2023, 2024.
- ICASSP, 2023, 2024, 2025.
- SampTA, 2019.

- DISP, Apr 2019
  - SIU, 2016, 2017, 2019.
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· **Teaching:**

- Wireless Communications
  - Digital Signal Processing
  - Digital Logic Design
  - Circuit Design
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· **Professional Memberships:**

- Chair, IEEE SPS Synthetic Apertures Technical Working Group
- Member, IEEE SPS Synthetic Apertures Standards Committee
- Member, IEEE Signal Processing Society (SPS)
- Member, IEEE Communications Society (ComSoc)
- Senior Member, IEEE