Fawad Zaman, Ph.D.

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G https://scholar.google.com/citations?user=8cYjz74AAAAJ&hl=en&oi=ao

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About

Dr. Fawad Zaman is working as a Tenured Associate Professor in the Department of Electrical & Computer Engineering, COMSATS University Islamabad (CUI), Pakistan. He received his Ph.D. degree in Electronic Engineering from International Islamic University, Islamabad, Pakistan. He was a visiting researcher from 2021-2022 in the department of Electrical & Electronic Engineering, Imperial College London, Uk, while currently, he has done postdoctorate from Chaulalongkorn University, Thailand. He is a professional engineer registered with Pakistan Engineering Council. He has over 10 years of experience in higher education, including teaching and learning, inclusive curriculum development, research and development, students advising and mentoring, and academic administration. His research interests cover many aspects of Array Signal Processing, Wireless Communications, MIMO Radar Systems, Faulty Antenna Arrays, Direction of Arrival Estimation, Adaptive Beamforming, Null Steering and Evolutionary Optimization Techniques.He has published around 50 research articles in internationally recognized data bases such as IEEE, Elsevier, Springer, MDPI and Hindawi. He has completed two funded projects awarded by HEC, Pakistan, focused on the design of efficient algorithms for signals and the design, modelling, and fabricating of RF sensor nodes while, currently, he is leading a project on the "Detection of Faulty Sensors in Planar Antenna Array," funded by HEC, Pakistan. He has been a lead guest editor for multiple special issues in Wireless Communications and Mobile Computing, and Mobile Information Systems journals. He has supervised one PhD and approximately 15 MS theses in signal processing and communication. He has been recognised for his exceptional research contributions with the best researcher award in 2017 and the research productivity award from 2015-2021 at CUI, Pakistan. he has chaired sessions at several notable international IEEE conferences.

Education

2023 – 2024   🔖 **Post Doctoral Fellow**, Chaulalongkorn University, Thailand.
Research Group: *Signal Processing and Communication.*
Research title: *Direction of Arrival Estimation and Beamforming For MIMO Radar Systems.*
Supervisor: *Prof. Gridsada Phanomchoeng.*

2021 – 2022   🔖 **Visiting Researcher**, Department of Electrical & Electronic Engineering, Imperial College London, UK.
Research Group: *Signal Processing and Communication.*
Research title: *Array Signal Processing in the presence of uncertainities and sensor failure.*
Supervisor: *Prof. A. Manikas.*

2009 – 2013   🔖 **Ph.D. Electronic Engineering**, International Islamic University Islamabad, Pakistan.
Research Area: *Signal Processing and optimization.*
Thesis title: *Estimation of Direction of Arrival for Adaptive Beamforming.*
Supervisor: *Prof. Ijaz Mansoor Qureshi.*

2007 – 2009   🔖 **M.S. Electronic Engineering**, International Islamic University Islamabad, Pakistan.
Specialization/Research Area: *Signal Processing*
Thesis title: *Estimation of Direction of Arrival and Beamforming using Planar Array.*
Supervisor: *Prof. Ijaz Mansoor Qureshi*

Research Interests

🔖 **Array Signal Processing, Wireless Communication, Adaptive Beamforming, Direction of Arrival Estimation, Null steering, Faulty Antenna Arrays, MIMO Radar Systems , Evolutionary Computing, Optimization Techniques.**

Employment History

2022 – · · · · 🔖 **Tenured Associaate Professor.** Department of Electrical & Computer Engineering, COMSATS University Islamabad, Pakistan.

2014 – 2021 🔖 **Assistant Professsror.** Department of Electrical & Computer Engineering, COMSATS University Islamabad, Pakistan.

2021 – 2022 🔖 **Worked as a visiting Instructor in UK** at Icknield High School, Queensbury Academy, Lea Manor High school, Cedars Upper School, Mark Rutherford School, Putteridge High school, Samuel Ryder Academy, Denbigh High school, The Chalk Hills Academy, Queen Elizabeth School.

Funded Projects

🔖 **Detection of Faulty sensors in Planar Antenna Array**, Awarded by HEC under National Research Program for University (NRPU), No. 70-17554/NRPU/R&D/HEC/2021.

🔖 **Design of efficient algorithms for parameters estimation of signals impinging on faulty antenna array**, Awarded by HEC, Pakistan, under start-up research grant No.21-323/SRGP/R&D/HEC/2014.

🔖 **Design, Model and fabrication of RF sensor nodes for localization and tracking of passive targets**, Awarded by HEC, Pakistan: under start-up research grant No.21-48/SRGP/R&D/HEC/2014.

Lead Guest Editorial Activities

2022 🔖 **Smart Antennas and Intelligent Sensors Based Systems: Enabling Technologies and Applications 2022,** Published in Wireless Communication and Mobile Computing.

2021 🔖 **Smart Antennas and Intelligent Sensors Based Systems: Enabling Technologies and Applications 2021,** Published in Wireless Communication and Mobile Computing.

2020 🔖 **Smart Antennas and Intelligent Sensors Based Systems: Enabling Technologies and Applications 2020,** Published in Wireless Communication and Mobile Computing.

2019 🔖 **Smart Antennas and Intelligent Sensors Based Systems: Enabling Technologies and Applications 2019,** Published in Wireless Communication and Mobile Computing.

2020 🔖 **Personal Communication for smart Spaces 2020,** Published in Mobile Information Systems.

Theses Supervision

i 🔖 **Student Name: Sadiq Akbar (PhD)** , Thesis title: Parameter Estimation of Electromagnetic plane waves using adaptive evolutionary Computing techniques.

ii 🔖 **Name: Mohsin Raza (MS)**, Title: Joint two dimension Direction of arrival estimation of Plan waves.

iii 🔖 **Name: Hammad Ul Hassan (MS)**, Title: Pattern Correction of Faulty Antenna Array using Nature Inspired Heuristic Methodologies

iv 🔖 **Name: Ali Hassan (MS)**,Title: Amplitude and 2-D Direction of Arrival Estimation of Far Field Sources Along with L-Shape Antenna Arrays.

Theses Supervision (continued)

v   🔖 **Name: Nauman Ahmad (MS)**, Title: Efficient Direction of Arrival Estimation of Acoustic Waves For Sonar Signal Processing.

vi   🔖 **Name: Shezad Ahmed (MS)**, Title: Direction of Arrival Mismatch Minimization of Main Beam Using Robust Generalized Sidelobe Canceller.

vii   🔖 **Name: Khwaja Nauman (MS)**, Title: Efficient Sidelobe Suppression without Decreasing Directivity of the Main Beam.

viii   🔖 **Name: Muhammad Waqas Riaz (MS)**, Title: Joint Elevation and Azimuth Angles Estimation for Three Parallel Uniform Linear Arrays.

ix   🔖 **Name: Tariq Mehmood (MS)**, Title: Estimation of Direction of arrival of plane waves using variants of hybrid Genetic Algorithm.

x   🔖 **Name: Muhammad Kashif (MS)**, Title: Identification of Input Non-Linear Control Autoregressive base electrically stimulated Muscle Model using Computational Heuristics.

xi   🔖 **Name: Asif Habib (MS)**, Title: Selective Diffusion based information propagation control in wireless network.

xii   🔖 **Name: Asim Shezad (MS)**, Title: Direction of arrival estimation using non uniform coprime array. Synopsis Approved .

xiii   🔖 **Name: Afaq Ahmed (MS)**, Title: Detection of Faulty antenna in Planar Array. Registered.

xiv   🔖 **Name: Izhar Alam (MS)**, Title: Direction of Arrival Estimation of EM waves using Adaptive Algorithms. Registered.

xv   🔖 **Name: Rabia Khalid, Sana Javed, Sana (BS)**, Title: GPS Based Telemetry Tracking Dish for the Positioning Of High Beam Signal Reception.

Teaching (Courses Taught)

🔖 **Graduate Courses (MS + PhD)**: Stochastic Processes, Advanced Digital Signal Processing, Radar Signal Processing, Advanced Engineering Maths.

🔖 **Under Graduate Courses (BS)**: Signals and Systems, Digital Signal Processing, Analog and Digital Communication, Microwave Engineering, Antenna Theory, Calculus and Analytic Geometry, Probability Methods for Engineers, Electric Circuit Analysis, Digital Logic Design.

Memberships

🔖 **Professional Engineer (PE) Pakistan Engineering Council. Electro/28980** .

🔖 **HEC, Pakistan Approved Supervisor**.

Awards and Achievements

2023-2024   🔖 **Postdoctoral Fellowship**, Awarded under Second Century Fund (C2F), Chulalongkorn University, Thailand.

2021-2022   🔖 **Postdoctoral Fellowship at Imperial College London, Uk**, Awarded by HEC, Pakistan.

2007-2013   🔖 **Indigenous Scholarship for MS Leading to PhD**, Awarded by HEC, Pakistan.

2015-2019   🔖 **Research Productive Awards**, at COMSATS University Islamabad, Pakistan.

2017   🔖 **Best Researcher Award**, at COMSATS University Islamabad, Pakistan.

2015-2019   🔖 **Four consecutive Annual Honorarium**, at COMSATS University Islamabad, Pakistan.

Professional Participation

- **Chaired session of Radar signal Processing**, 1st International Conference on Electrical, Communication and Computer Engineering (ICECCE) on 24th – 25th July, 2019 at Swat Serena Hotel, KP, Pakistan.

- **Chaired session of signal processing**, in IEEE Intentional conference on intelligent system engineering" Quaid-e-Azam auditorium, Old campus IIU (Faisal Mosque), Islamabad, 17th January, 2016.

- **Chaired session of signal processing and Computer Graphics, Image Processing**, in IEEE International conference on Frontiers of Information Technology at Serena Hotel, Islamabad, Pakistan, 21st December, 2015.

- **Chaired session of signal processing and Computer Graphics, Image Processing**, in IEEE International conference on Frontiers of Information Technology at Serena Hotel, Islamabad, Pakistan 19th December, 2014.

- **Certificate for the Faculty Development Program** , at COMSATS Headquarter, G-5, Islamabad, Pakistan, 2016.

Administrative Responsibilities

2021 – 2019	**In charge Graduate Program**.
2015 – 2019	**Convener campus Inspection Committee**.
2016–2019	**Secretary Research and development Committee**.
2016 – 2018	**Advisor maintenance committee**.
2015 – 2016	**Convener Quality of Education**.
2018 – 2019	**Convener campus Discipline committee 2018-2019**.

Research Publications

Journal Articles

1. N. Ahmed, H. Wang, M. A. Z. Raja, W. Ali, M. Kashif, and F. Zaman, "Novel design of grey wolf optimization heuristics for high resolution direction of arrival estimation in acoustic plane waves," *Wireless Personal Communications*, vol. 128, no. 4, pp. 2507–2529, 2023.

2. S. Akbar, M. Sohail, F. Zaman, M. A. R. Khan, N. Ajavakom, and G. Phanomchoeng, "A novel approach for direction of arrival estimation in co-located mimo radars by exploiting extended array manifold vectors," *Sensors*, vol. 23, no. 5, p. 2550, 2023.

3. F. Zaman, Z. Akhtar, S. Mehmood, S. Akbar, and G. Phanomchoeng, "A novel fda-mimo deceptive jamming method for neutralizing phase array radar," *IEEE Access*, 2023.

4. M. B. E. Sajid, S. Ullah, N. Javaid, I. Ullah, A. M. Qamar, and F. Zaman, "Exploiting machine learning to detect malicious nodes in intelligent sensor-based systems using blockchain," *Wireless Communications and Mobile Computing*, vol. 2022, pp. 1–16, 2022.

5. F. H. Shah, M. A. Z. Raja, F. Al-Turjman, F. Zaman, and X. Yang, "Evolutionary heuristic computing paradigm for 2d-doa estimation along circular array," *Wireless Communications and Mobile Computing*, vol. 2022, 2022.

6. F. Zaman, H. C. So, D. Kwak, F. Ullah, and S. Lee, "Smart antennas and intelligent sensors based systems: Enabling technologies and applications, 2020," *Wireless Communications and Mobile Computing*, vol. 2022, 2022.

7. N. Ahmed, H. Wang, M. A. Z. Raja, *et al.*, "Performance analysis of efficient computing techniques for direction of arrival estimation of underwater multi targets," *IEEE Access*, vol. 9, pp. 33 284–33 298, 2021.

8. S. Akbar, M. A. Z. Raja, N. I. Chaudhary, F. Zaman, and H. Alquhayz, "Flower pollination heuristics for parameter estimation of electromagnetic plane waves," *CMC Comput. Mater. Contin*, vol. 68, pp. 2529–2543, 2021.

9. S. Mehmood, A. N. Malik, I. M. Qureshi, M. Z. U. Khan, and F. Zaman, "A novel deceptive jamming approach for hiding actual target and generating false targets," *Wireless Communications and Mobile Computing*, vol. 2021, pp. 1–20, 2021.

10. R. Siddiqui, H. Anwar, F. Ullah, and F. Ullah and Zaman, "Power prediction of combined cycle power plant (ccpp) using machine learning algorithm-based paradigm," *Wireless Communications and Mobile Computing*, vol. 2021, pp. 1–13, 2021.

11. A. Ullah, N. Javaid, A. S. Yahaya, T. Sultana, F. A. Al-Zahrani, and F. Zaman, "A hybrid deep neural network for electricity theft detection using intelligent antenna-based smart meters," *Wireless Communications and Mobile Computing*, vol. 2021, pp. 1–19, 2021.

12. M. A. Z. Raja, R. Akhtar, N. I. Chaudhary, W. U. Khan, and F. Zaman, "Design of backtracking search optimization paradigm for joint amplitude-angle measurement of sources lying in fraunhofer zone," *Measurement*, vol. 149, p. 106 977, 2020.

13. F. Zaman, A. Hassan, S. Akbar, A. U. Rehman, and M. A. Z. Raja, "Novel computational heuristics for wireless parameters estimation in bistatic radar systems," *Wireless Personal Communications*, vol. 111, pp. 909–927, 2020.

14. S. Akbar, F. Zaman, M. Asif, A. U. Rehman, and M. A. Z. Raja, "Novel application of fo-dpso for 2-d parameter estimation of electromagnetic plane waves," *Neural Computing and Applications*, vol. 31, pp. 3681–3690, 2019.

15. A. Elahi, I. M. Qureshi, S. U. Khan, F. Zaman, and N. Gul, "Improved algorithms for interference suppression in non-contiguous orthogonal frequency division multiplexing-based cognitive radio systems," *Neural Computing and Applications*, vol. 31, pp. 3729–3741, 2019.

16. Z. Fawad, S. Lee, M. K. Rahim, and S. Khan, "Smart antennas and intelligent sensors based systems: Enabling technologies and applications," *Wireless Communications and Mobile computing*, vol. 2019, 2019.

17. M. Z. U. Khan, A. N. Malik, F. Zaman, and I. M. Qureshi, "Robust lcmv beamformer for direction of arrival mismatch without beam broadening," *Wireless Personal Communications*, vol. 104, pp. 21–36, 2019.

18. M. A. Zahoor, R. Akhtar, N. I. Chaudhary, Z. Zhiyu, Q. Khan, and F. Zaman, "A new computing paradigm for the optimization of parameters in adaptive beamforming using fractional processing," *The European Physical Journal Plus*, vol. 134, no. 6, p. 275, 2019.

19. F. Zaman, S. U. Khan, M. A. Z. Raja, S. A. Niazi, *et al.*, "Backtracking search optimization paradigm for pattern correction of faulty antenna array in wireless mobile communications," *Wireless Communications and Mobile Computing*, vol. 2019, 2019.

20. A. Elahi, I. M. Qureshi, F. Zaman, N. Gul, and M. Atif, "Out-of-band radiation reduction in cognitive radio ofdm systems hybridizing firefly algorithm with generalized sidelobe canceller," *Wireless Personal Communications*, vol. 100, pp. 941–956, 2018.

21. S. Akbar, M. A. Z. Raja, F. Zaman, T. Mehmood, and M. A. R. Khan, "Design of bio-inspired heuristic techniques hybridized with sequential quadratic programming for joint parameters estimation of electromagnetic plane waves," *Wireless Personal Communications*, vol. 96, pp. 1475–1494, 2017.

22. A. Elahi, I. M. Qureshi, F. Zaman, N. Gul, and T. Saleem, "Suppression of mutual interference in noncontiguous orthogonal frequency division multiplexing based cognitive radio systems," *Wireless Communications and Mobile Computing*, vol. 2017, 2017.

23 S. U. Khan, I. M. Qureshi, F. Zaman, and W. Khan, "Detecting faulty sensors in an array using symmetrical structure and cultural algorithm hybridized with differential evolution," *Frontiers of Information Technology & Electronic Engineering*, vol. 18, pp. 235–245, 2017.

24 F. Zaman, "Joint angle-amplitude estimation for multiple signals with l-structured arrays using bioinspired computing," *Wireless Communications and Mobile Computing*, vol. 2017, 2017.

25 A. Elahi, I. M. Qureshi, F. Zaman, and F. Munir, "Reduction of out of band radiation in non-contiguous ofdm based cognitive radio system using heuristic techniques.," *J. Inf. Sci. Eng.*, vol. 32, no. 2, pp. 349–364, 2016.

26 A. Elahi, I. M. Qureshi, F. Zaman, F. Munir, and A. Umar, "Techniques for the suppression of sidelobes in a non-contiguous orthogonal frequency division multiplexing framework," vol. 3, no. 1, pp. 1–11, 2016.

27 S. U. Khan, I. M. Qureshi, H. Haider, F. Zaman, and B. Shoaib, "Diagnosis of faulty sensors in phased array radar using compressed sensing and hybrid irls–ssf algorithm," *Wireless Personal Communications*, vol. 91, pp. 383–402, 2016.

28 A. Elahi, I. M. Qureshi, Z. U. Khan, and F. Zaman, "Sidelobe reduction in non-contiguous ofdm-based cognitive radio systems using a generalized sidelobe canceller," *Applied Sciences*, vol. 5, no. 4, pp. 894–909, 2015.

29 Z.-U. Khan, A. N. Malik, F. Zaman, S. A. Hussain, and A.-R. Khan, "Sidelobe suppression with null steering by independent weight control," *International Journal of Antennas and Propagation*, vol. 2015, 2015.

30 F. Zaman, I. M. Qureshi, A. U. Rehman, and S. A. K. Tanoli, "Multiple target localization with bistatic radar using heuristic computational intelligence techniques," *International Journal of Antennas and Propagation*, vol. 2015, 2015.

31 S. U. Khan, I. Qureshi, F. Zaman, B. Shoaib, A. Naveed, and A. Basit, "Correction of faulty sensors in phased array radars using symmetrical sensor failure technique and cultural algorithm with differential evolution," *The Scientific World Journal*, vol. 2014, 2014.

32 F. Zaman and I. M. Qureshi, "5d parameter estimation of near-field sources using hybrid evolutionary computational techniques," *The Scientific World Journal*, vol. 2014, 2014.

33 F. Zaman, I. M. Qureshi, F. Munir, and Z. U. Khan, "Four-dimensional parameter estimation of plane waves using swarming intelligence," *Chinese Physics B*, vol. 23, no. 7, p. 078 402, 2014.

34 S. U. Khan, I. M. Qureshi, F. Zaman, and A. Naveed, "Null placement and sidelobe suppression in failed array using symmetrical element failure technique and hybrid heuristic computation," *Progress In Electromagnetics Research B*, vol. 52, pp. 165–184, 2013.

35 S. Khan, I. Qureshi, F. Zaman, A. Basit, and W. Khan, "Application of firefly algorithm to fault finding in linear arrays antenna," *World Applied Sciences Journal*, vol. 26, no. 2, pp. 232–238, 2013.

36 S. Mehmood, Z. U. Khan, F. Zaman, and B. Shoaib, "Performance analysis of the different null steering techniques in the field of adaptive beamforming," *Res. J. Appl. Sci. Eng. Technol*, vol. 5, no. 15, pp. 4006–4012, 2013.

37 F. Zaman, I. M. Qureshi, J. A. Khan, and Z. U. Khan, "An application of artificial intelligence for the joint estimation of amplitude and two-dimensional direction of arrival of far field sources using 2-l-shape array," *International Journal of Antennas and Propagation*, vol. 2013, 2013.

38 Z. U. Khan, A. Naveed, I. Qureshi, and F. Zaman, "Comparison of adaptive beamforming algorithms robust against directional of arrival mismatch," *Journal of Space Technology*, vol. 1, 2012.

39 F. Zaman, I. M. Qureshi, A. Naveed, J. A. Khan, and R. M. A. Zahoor, "Amplitude and directional of arrival estimation: Comparison between different techniques," *Progress in Electromagnetics Research B*, vol. 39, pp. 319–335, 2012.

40 F. Zaman, I. M. Qureshi, A. Naveed, and Z. U. Khan, "Joint estimation of amplitude, direction of arrival and range of near field sources using memetic computing," *Progress in Electromagnetics Research C*, vol. 31, pp. 199–213, 2012.

41 F. Zaman, I. Qureshi, A. Naveed, and Z. Khan, "Real time direction of arrival estimation in noisy environment using particle swarm optimization with single snapshot," *Research Journal of Applied Sciences, Engineering and Technology*, vol. 4, no. 13, pp. 1949–1952, 2012.

42 K. ZU, A. Naveed, Q. IM, and F. Zaman, "Independent null steering by decoupling complex weights," *IEICE Electronics Express*, vol. 8, no. 13, pp. 1008–1013, 2011.

Conference Proceedings

1 Z.-U. Khan, A. Naveed, F. Munir, and F. Zaman, "Efficient sidelobe suppression by matching beams in two polynomial technique," in *2016 International Conference on Intelligent Systems Engineering (ICISE)*, IEEE, 2016, pp. 345–349.

2 S. U. Khan, I. M. Qureshi, F. Zaman, B. Shoaib, and K. Ashraf, "An application of hybrid nature inspired computational technique to detect faulty element in array antenna," in *2015 12th International Bhurban Conference on Applied Sciences and Technology (IBCAST)*, IEEE, 2015, pp. 629–632.

3 F. Zaman, S. U. Khan, K. Ashraf, and I. M. Qureshi, "An application of hybrid differential evolution to 3-d near field source localization," in *Proceedings of 2014 11th International Bhurban Conference on Applied Sciences & Technology (IBCAST) Islamabad, Pakistan, 14th-18th January, 2014*, IEEE, 2014, pp. 474–477.

4 Z. Fawad, J. A. Khan, Z. U. Khan, and I. M. Qureshi, "An application of hybrid computing to estimate jointly the amplitude and direction of arrival with single snapshot," in *Proceedings of 2013 10th International Bhurban Conference on Applied Sciences & Technology (IBCAST)*, IEEE, 2013, pp. 364–368.

5 M. A. ur Rehman, F. Zaman, I. Qureshi, and Y. A. Sheikh, "Null and sidelobes adjustment of damaged array using hybrid computing," in *2012 International Conference on Emerging Technologies*, IEEE, 2012, pp. 1–4.

6 Y. A. Sheikh, F. Zaman, I. Qureshi, and M. Atique-ur-Rehman, "Amplitude and direction of arrival estimation using differential evolution," in *2012 International Conference on Emerging Technologies*, IEEE, 2012, pp. 1–4.