

Abdul Wadood Abdul Waheed

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Prof. Abdul Wadood received his PhD in Signal and Image Processing from the University of Poitiers, France, in 2011. Currently, he is working as a Professor in the Department of Computer Engineering, College of Computer and Information Sciences, King Saud University. His research interests are focused on multimedia security, biometrics, privacy, medical image processing, and video understanding, where he is working on several externally funded research projects. He has published over 100 papers in well-reputed conferences and journals and has 2 patents. He developed the Communications Laboratory by Lucus Nulle and the Biometrics Laboratory funded by ZKTeco at King Saud University. He received the Best Faculty Award from the College of Computer and Information Sciences, King Saud University, in 2017. He also appeared on Stanford's list of the World's Top 2% scientists.

Over the past few years, he has worked extensively on Quality Assurance and Accreditation for multiple national and international accreditation bodies. He established the Quality Assurance procedures at the Department of Computer Engineering related to ETEC-NCAAA. He coordinated the Quality Assurance effort of the College of Computer and Information Sciences for the Department of Computer Engineering. He conducted mock NCAAA reviews for various programs and provided independent opinions to different programs. He has also worked as ETEC-NCAAA external reviewer for various programs and institutions.

Research Interests

Cyber security, AI, medical image processing, agricultural applications of robotics, color image watermarking and fingerprinting, perceptual mutiresolutional analysis of images, steganography, biometric template protection, privacy and security.

Employment

November 2021 to date

Professor, Department of Computer Engineering, College of Computer and Information Sciences, King Saud University, Kingdom of Saudi Arabia.

October 2017 to November 2021

Associate Professor, Department of Computer Engineering, College of Computer and Information Sciences, King Saud University, Kingdom of Saudi Arabia.

December 2011 to October 2017

Assistant Professor, Department of Computer Engineering, College of Computer and Information Sciences, King Saud University, Kingdom of Saudi Arabia.

Courses Taught (Graduate and Undergraduate)

Signals and Systems, Digital Logic Design, Analysis of Signals and Systems, Digital Signal Processing, Digital Image Processing, Introduction to Random Processes, and Data Transmission and Digital Communications Lab.

Service Activities

1. Graduate Studies Committee, Department of Computer Engineering, College of Computer and Information Sciences, King Saud University, 2019 to date.
2. Academic Plans Committee, Department of Computer Engineering, College of Computer and Information Sciences, King Saud University, 2019 to date.
3. Head NCAAA Committee, Department of Computer Engineering, College of Computer and Information Sciences, King Saud University, 2013 to 2019.
4. Member Development and Quality Committee, College of Computer and Information Sciences, King Saud University, 2013 to 2019.
5. Member Department Council, Department of Computer Engineering, College of Computer and Information Sciences, King Saud University, 2011 to date.
6. Reviewer for Journals - Computers & Electrical Engineering, IEEE Access, Computer Journal – Oxford University Press, Journal of King Saud University - Computer and Information Sciences, Telecommunication Systems and Telematics and Informatics.

Review and Accreditation

Conducted more than 20 Reviews for ETEC-NCAAA for different Institutions and Programs across the Kingdom of Saudi Arabia including the following.

Institutional Reviews

1. Institutional Accreditation Panel, Education & Training Evaluation Commission, National Center for Academic Accreditation & Evaluation (ETEC-NCAAA): Buraydah Private Colleges, Saudi Arabia, September, 2020.
2. Institutional Accreditation Panel, Education & Training Evaluation Commission, National Center for Academic Accreditation & Evaluation (ETEC-NCAAA): Alasala Colleges, Saudi Arabia, April, 2021.
3. Institutional Accreditation Panel, Education & Training Evaluation Commission, National Center for Academic Accreditation & Evaluation (ETEC-NCAAA): University of Hafr Al Batin, Saudi Arabia, October-November, 2021.

Program Reviews

1. Program Accreditation Panel, Education & Training Evaluation Commission, National Center for Academic Accreditation & Evaluation (ETEC-NCAAA): Computer Engineering Program at King Khalid University, Saudi Arabia, November 2018.
2. Program Accreditation Panel, Education & Training Evaluation Commission, National Center for Academic Accreditation & Evaluation (ETEC-NCAAA): Computer Science Program at Shaqra University, Saudi Arabia, November 2022.

Research Grants

1. Image watermarking using local texture descriptors in the spatial and transform domains King Abdulaziz City for Sciences and Technology (KACST), Riyadh, KSA, Duration: June 2020 – June 2022 Responsibility: Principal Investigator.
2. A Framework for Arabic Media Mining and Information Extraction Using Continuous Domain Semantic Representation, KSA International Collaboration Grant, Research and Development Office at the Ministry of Education, Riyadh, KSA, Duration: 2020-2022, Responsibility: Co-Investigator.
3. Deep learning based EEG brain control for hand rehabilitation of stroke patients, KSA International Collaboration Grant, Research and Development Office at the Ministry of Education, Riyadh, KSA, Duration: 2020-2022, Responsibility: Co-Investigator.
4. Hybrid multi-biometric template protection approach based on Watermarking and Secure Sketch. General Direction of Research Grants (GDRG), King Abdulaziz City for Sciences and Technology (KACST), Riyadh, KSA, Duration: 2015–2016 Responsibility: Co-Investigator.
5. Biometric template protection for enhanced security. Research Center, CCIS, King Saud University, Riyadh, KSA, Duration: November 2012–2014 Responsibility: Co-Investigator.
6. Chaos based image steganography algorithm. Research Center, CCIS, King Saud University, Riyadh, KSA, Duration: 2012–2014 Responsibility: Principal Investigator.

Education

Doctor of Philosophy in Signal and Image Processing - 2011

University of Poitiers, Poitiers, France

Title of Thesis: Robust Multichannel Perceptual Color Image Watermarking and Private Anonymous Fingerprinting.

Master of Science in Information Technology and Communication - 2007

University of Limoges, Limoges, France

Title of Thesis: Error Correcting Codes for Image Watermarking.

Post Graduate Diploma in Computer Engineering - 2005

National University of Sciences and Technology, Rawalpindi, Pakistan

Bachelor of Computer Engineering - 2004

COMSATS Institute of Information Technology (CIIT), Islamabad, Pakistan

Title of Project: All Digital $\pi/4$ Quadrature Phase Shift Keying ($\pi/4$ QPSK) Modulator and Demodulator for High Speed Communications on an FPGA.

Thesis Supervision

PhD Thesis

1. Sign Language Recognition using Transformer Technique with Multi-Modalities Input, A. A. Alkhoraif, Ongoing.
2. Abnormal event detection for video surveillance using transformer model, A. Alshalawi, Ongoing.
3. Sensor based human activity recognition with spatio-temporal deep learning, O. Almohammadi, 2022.
4. Hand gesture recognition for sign language using deep learning techniques, M. H. Al-Hammadi, 2020.

Master Thesis

1. Saudi sign language recognition using deep learning, N. M. Almadhi, Ongoing.
2. Image Authentication Using Watermarking and Blockchain, A. Alsehli, 2021.
3. Crowd density classification using convolutional neural networks, N. I. Alkharashi, 2021.
4. An Adaptive framework for enhanced security performance of smart parking networks, W. A. Alkenazan, 2021.
5. Digital image watermarking using local texture descriptors, B. A. Al-Fawaz, 2017.
6. Biometric template protection using watermarking, O. Almohammadi, 2016.

Patents

1. M. A. Mekhtiche, M. M. A. Alsulaiman, Y. A. M. Alohal, M. A. Bencherif, G. Muhammad, **W. Abdul**, M. F. A. Naji, H. I. H. Mathkour, M. M. Algabri, H. A. Elgibreen, H. A. Ghaleb, H. T. Altaheri, T. M. A. Alfaqih, M. H. A. Al-hammadi, "Robotic system for harvesting and maintaining date palms", US Patent 11910751, 2024, Granted.
2. M. A. Mekhtiche, M. M. Alsulaiman, H. I. Mathkour, M. A. Bencherif, M. F. A. Naji, M. M. Algabri, G. Muhammad, **W. Abdul**, H. A. Ghaleb, K. N. Almutib, H. T. Ramdane, A. U. Syed, F. D. Naji and H. T. Altaheri, "Tree harvesting tool", US Patent 10,485,171, 2019, Granted.
3. M. M. A. Al-Gabri, M. M. Alsulaiman, H. I. Mathkour, M. A. Bencherif, M. F. A. Naji, M. A. Mekhtiche, G. Muhammad and **W. Abdul**, "Portable robot for two-way communication with the hearing-impaired", US Patent Application 15,916,198, 2019, Filed.

Journal Publications

1. B. Khalid, A. Hassan, M. Yasin, M. Salman, M. Fasih Uddin Butt, **W. Abdul**, and I. K. Niazi, "A triple-shallow CNN with genetic algorithm channel selection method for classifying EEG complex limb movements", Biomedical Signal Processing and

- Control, vol. 105, 107541, 2025.
2. A. Alshalawi, **W. Abdul**, and G. Muhammad, "Advanced Detection of Violence from Video: Performance Evaluation of Transformer and State of the Art of Convolution of Neural Network Transformer," in *IEEE Access*, vol. 13, pp. 74200-74216, 2025.
 3. O. Nafea, **W. Abdul**, and G. Muhammad, "Incorporating Attention Mechanism Into CNN-BiGRU Classifier for HAR," in *IEEE Access*, vol. 12, pp. 160205-160218, 2024.
 4. U. Bibi, M. Mazhar, D. Sabir, M. Fasih Uddin Butt, A. Hassan, M. A. Ghazanfar, A. A. Khan, and **W. Abdul**, "Advances in Pruning and Quantization for Natural Language Processing," in *IEEE Access*, vol. 12, pp. 139113-139128, 2024.
 5. M. Sajid, A. Hassan, D. A. Khan, S. A. Khan, A. D. Bakhshi, M. U. Akram, M. Babar, F. Hussain, and **W. Abdul**, "AI-CADR: Artificial Intelligence Based Risk Stratification of Coronary Artery Disease Using Novel Non-Invasive Biomarkers," in *IEEE Journal of Biomedical and Health Informatics*, vol. 28, no. 12, pp. 7543-7552, 2024.
 6. M. Touheed, U. Zubair, D. Sabir, A. Hassan, M. Fasih Uddin Butt, F. Riaz, **W. Abdul**, and Rashid Ayub, "Applications of Pruning Methods in Natural Language Processing," in *IEEE Access*, vol. 12, pp. 89418-89438, 2024.
 7. M. Alsulaiman, M. Faisal, M. Mekhtiche, M. Bencherif, T. Alrayes, G. Muhammad, H. Mathkour, **W. Abdul**, Y. Alohal, M. Alqahtani, and H. Al-Habib "Facilitating the communication with deaf people: Building a largest Saudi sign language dataset". *Journal of King Saud University-Computer and Information Sciences*, 35(8), p.101642, 2023.
 8. M. Faisal, M. Alsulaiman, M. Mekhtiche, B. M. Abdelkader, M. Algabri, T. B. S. Alrayes, G. Muhammad, H. Mathkour, **W. Abdul**, Y. Alohal, M. Al-Hammadi, H. Altaheri, T. Alfakih, "Enabling Two-Way Communication of Deaf Using Saudi Sign Language," in *IEEE Access*, vol. 11, pp. 135423-135434, 2023, doi: 10.1109/ACCESS.2023.3337514.
 9. S. Khan, A. Hassan, F. Hussain, A. Perwaiz, F. Riaz, M. Alsabaan, **W. Abdul**, Enhanced Spatial Stream of Two-Stream Network Using Optical Flow for Human Action Recognition. *Appl. Sci.* 2023, 13, 8003. <https://doi.org/10.3390/app13148003>.
 10. S. E. Ali, N. Tariq, F. A. Khan, M. Ashraf, **W. Abdul**, K Saleem. BFT-IoMT: A Blockchain-Based Trust Mechanism to Mitigate Sybil Attack Using Fuzzy Logic in the Internet of Medical Things. *Sensors* 2023, 23, 4265. <https://doi.org/10.3390/s23094265>
 11. A. Almansour, M. Alawad, A. Aljouie, H. Almatar, W. Qureshi, B. Alabdulkader, N. Alkanhal, **W. Abdul**, M. Almufarrej, S. Gangadharan, T. Aldebasi, B. Alsomaie, and A. Almazroa, "Peripapillary atrophy classification using CNN deep learning for glaucoma screening", *PLOS ONE*, 17 (10), e0275446, 2022.
 12. A. Alotaibi, M. Hussain, H. AboAlSamh, **W. Abdul**, and G. Bebis, "Cross-Sensor Fingerprint Enhancement Using Adversarial Learning and Edge Loss", *Sensors*, 22 (18), 6973, 2022.
 13. M. Al-Hammadi, M. A. Bencherif, M. Alsulaiman, G. Muhammad, M. A. Mekhtiche, **W. Abdul**, Y. A. Alohal, T. S. Alrayes, H. Mathkour, M. Faisal, M. Algabri, H. Altaheri, T. Alfakih and H. Ghaleb, "Spatial Attention-Based 3D Graph Convolutional Neural Network for Sign Language Recognition", *Sensors*, 22 (12), 4558, 2022.
 14. O. Nafea, **W. Abdul**, G. Muhammad, "Multi-sensor human activity recognition using CNN and GRU", *International Journal of Multimedia Information Retrieval*, 11 (2), pp. 135-147, 2022.
 15. W. U. I. Zafar, M. A. U. Rehman, F. Jabeen, S. Ghouzali, Z. Rehman, and **W. Abdul**,

- “Context-Aware Pending Interest Table Management Scheme for NDN-Based VANETs”, *Sensors*, 22 (11), 4189, 2022.
16. **W. Abdul**, “Security of medical images over insecure communication channels using zero-steganography”, *International Journal of Distributed Sensor Networks*, 18 (2), 15501477211006347, 2022.
 17. S. U. Amin, H. Altaheri, G. Muhammad, M. Alsulaiman, and **W. Abdul**, “Attention-Inception and Long Short-Term Memory-based Electroencephalography Classification for Motor Imagery Tasks in Rehabilitation”, *IEEE Transactions on Industrial Informatics*, 2021.
 18. **W. Abdul**, M. Alsulaiman, S. U. Amin, M. Faisal, G. Muhammad, F. R. Albogamy, M. A. Bencherif, and H. Ghaleb, “Intelligent real-time Arabic sign language classification using attention-based inception and BiLSTM”, *Computers & Electrical Engineering*, 95, 107395, 2021.
 19. H. Altaheri, G. Muhammad, M. Alsulaiman, S. U. Amin, G. A. Altuwaijri, **W. Abdul**, M. A. Bencherif, and M. Faisal, “Deep learning techniques for classification of electroencephalogram (EEG) motor imagery (MI) signals: a review” *Neural Computing and Applications*, pp. 1-42, 2021.
 20. Y. K. Musallam, N. I. AlFassam, G. Muhammad, S. U. Amin, M. Alsulaiman, **W. Abdul**, H. Altaheri, M. A. Bencherif, and M. Algabri, “Electroencephalography-based motor imagery classification using temporal convolutional network fusion”, *Biomedical Signal Processing and Control*, 69, 102826, 2021.
 21. S. Ghouzali, H. Altuwaijri, M. Lafkih, M. Al-Goblan, and **W. Abdul**, “Android secure storage application using fuzzy vault-based key binding”, *International Journal on Information Technologies & Security*, 13, no. 3, 2021.
 22. H. Elgibreen, M. Faisal, M. Al Sulaiman, S. Abdou, M. A. Mekhtiche, A. M. Moussa, Y. A. Alohal, **W. Abdul**, G. Muhammad, M. Rashwan, and M. Algabri, “An incremental approach to corpus design and construction: application to a large contemporary Saudi corpus”, *IEEE Access*, 2021, no. 9, pp. 88405-88428, 2021.
 23. M. S. Khan, F. Jabeen, S. Ghouzali, Z. Rehman, S. Naz, and **W. Abdul**, “Metaheuristic Algorithms in Optimizing Deep Neural Network Model for Software Effort Estimation”, *IEEE Access* 2021, no. 9, pp. 60309-60327, 2021.
 24. W. A. Alkenazan, A. A. Taha, M. J. F. Alenazi, and **W. Abdul**, “An Enhanced Framework for Secure Smart Parking Management Systems”, *International Transaction Journal of Engineering, Management, & Applied Sciences & Technologies*, 12, no. 7, pp. 1-13, 2021.
 25. S. Ghouzali, O. Nafea, **W. Abdul**, and M. Hussain, “Cancelable Multimodal Biometrics Based on Chaotic Maps”, *Applied Sciences*, 11, no. 18, 8573, 2021.
 26. A. Abrar, **W. Abdul**, and Sanaa Ghouzali, “Secure Image Authentication Using Watermarking and Blockchain”, *Intelligent Automation and Soft Computing*, 28, no. 2, pp. 577-591, 2021.
 27. N. Bousnina, S. Ghouzali, M. Mikram, M. Lafkih, O. Nafea, M. Al-Razgan, and **W. Abdul**, “Hybrid multi-modal biometric template protection”, *Intelligent Automation and Soft Computing*, 27, no. 1, pp. 35-51, 2021.
 28. O. Nafea, **W. Abdul**, G. Muhammad, and M. Alsulaiman, “Sensor-based human activity recognition with spatio-temporal deep learning” *Sensors* 21 (6), 2141, 2021.
 29. M. Al-Hammadi, G. Muhammad, **W. Abdul**, M. Alsulaiman, M. A. Bencherif, T. S. Alrayes, H. Mathkour, and M. A. Mekhtiche. “Deep learning-based approach for sign

- language gesture recognition with efficient hand gesture representation." *IEEE Access* 8 (2020): 192527-192542.
30. W. A. Alkenazan, A. A. Taha, M. J.F. Alenazi, **W. Abdul**, "Modeling a Cloud-Based Smart Parking WLAN Networks Using IEEE802.11AC Technology", *The ISC International Journal of Information Security (ISecure)*, 12(3), pp. 101-109, 2020.
 31. L. AlShehri, M. Hussain, H. Aboalsamh, and **W. Abdul**. "Fragile watermarking for image authentication using BRINT and ELM." *Multimedia Tools and Applications* 79, no. 39 (2020): 29199-29223.
 32. M. J. F. Alenazi, A. Almutairi, S. Almowuena, **W. Abdul**, and E. K. Çetinkaya. "NFV Provisioning in Large-Scale Distributed Networks with Minimum Delay." *IEEE Access* 8 (2020): 151753-151763.
 33. M. Al-Hammadi, G. Muhammad, **W. Abdul**, M. Alsulaiman, M. A. Bencherif, and M. A. Mekhtiche. "Hand Gesture Recognition for Sign Language Using 3DCNN." *IEEE Access* 8 (2020): 79491-79509.
 34. **W. Abdul**, O. Nafea, and S. Ghouzali. "Combining Watermarking and Hyper-Chaotic Map to Enhance the Security of Stored Biometric Templates." *The Computer Journal* 63, no. 3 (2020): 479-493.
 35. R. Ouni, M. Zaidi, M. Alsabaan, **W. Abdul**, and Amr Alasaad. "Mobile geolocation techniques for indoor environment monitoring." *KSII Transactions on Internet and Information Systems (TIIS)* 14, no. 3 (2020): 1337-1362.
 36. A. A. Taha, M. F. Feteiha, and **W. Abdul**, "Performance Evaluation for LoRa Transceiver", *International Journal of Computer Science and Software Engineering*, nol. 8, no. 2, pp. 25-39, 2019.
 37. **W. Abdul**, "Region Based Segmentation Techniques for Digital Images", *Journal of Computational and Theoretical Nanoscience*, vol. 16, no. 9, pp. 3792-3801, 2019.
 38. M. S. Hossain, G. Muhammad, M. Al-Qurishi, M. Masud, A. Almogren, **W. Abdul**, and Atif Alamri, "Cloud-oriented emotion feedback-based exergames framework", *Multimedia Tools Appl.*, pp. 1-17, 2018. (ISI Indexed, IF: 1.541).
 39. M. S. Hossain, G. Muhammad, **W. Abdul**, B. Song, and B. B. Gupta, "Cloud-assisted secure video transmission and sharing framework for smart cities" in *Future Generation Computer Systems*, vol. 83, pp. 596-606, 2018. (ISI Indexed, IF: 4.639).
 40. F. Jabeen, Z. Hamid, **W. Abdul**, S. Ghouzali, A. Khan, S. U. R. Malik, M. S. Khan, and S. Nawaz., "Anonymity-preserving reputation management system for health sector", *PloS ONE*, 13(4):e0195021, 2018. (ISI Indexed, IF: 2.766).
 41. S. Aslam, N. Javaid, F. A. Khan, A. Alamri, A. Almogren, and **W. Abdul**, "Towards Efficient Energy Management and Power Trading in a Residential Area via Integrating a Grid-Connected Microgrid." *Sustainability* 10, no. 4 (2018): 1245. (ISI Indexed, IF: 2.075).
 42. Z. Iqbal, N. Javaid, S. Iqbal, S. Aslam, A. A. Khan, **W. Abdul**, A. Almogren and A. Alamri, "A Domestic Microgrid with Optimized Home Energy Management System," in *Energies*, vol. 11, no. 4, pp. 1002-1040, 2018. (ISI Indexed, IF: 2.676).
 43. S. Asif, M. S. Hossain, Y. Kong, **W. Abdul**, "A Fully RNS based ECC Processor", *Integration* vol. 61, 138-149, 2018. (ISI Indexed, IF: 0.906).
 44. N. Muqaddas, Z. Iqbal, N. Javaid, Z. A. Khan, **W. Abdul**, A. Almogren, A. Alamri, "Efficient Power Scheduling in Smart Homes Using Hybrid Grey Wolf Differential Evolution Optimization Technique with Real Time and Critical Peak Pricing Schemes", *Energies* 11, no. 2, pp. 384, 2018. (ISI Indexed, IF: 2.676).

45. F. Jabeen, Z. Hamid, A. Akhunzada, **W. Abdul**, S. Ghouzali, "Trust and reputation management in healthcare systems: Taxonomy requirements and open issues", *IEEE Access*, vol. 6, pp. 17246-17263, 2018. (ISI Indexed, IF: 3.244).
46. S. U. R. Khan, S. P. Lee, N. Javaid, **W. Abdul**, A systematic review on test suite reduction: Approaches, experiment's quality evaluation, and guidelines, *Access*, vol. 6, pp 11816–11841, 2018. (ISI Indexed, IF: 3.244).
47. A. A. Zafar, S. Saif, M. Khan, J. Iqbal, A. Akhunzada, **W. Abdul**, A. Al-Mogren, A. Alamri, "Taxonomy of factors causing integration failure during global software development", *IEEE Access*, vol. 6, pp. 22228-22239, 2018. (ISI Indexed, IF: 3.244).
48. **W. Abdul**, Z. Ali, S. Ghouzali, B. Alfawaz, G. Muhammad, M. S. Hossain, "Biometric Security Through Visual Encryption for Fog Edge Computing", *IEEE Access*, 2017, Volume 5, pages. 5531-5538, 2017. (ISI Indexed, IF: 3.244).
49. **W. Abdul**, Z. Ali, S. Ghouzali, M. Alsulaiman, "Security and Privacy for Medical Images Using Chaotic Visual Cryptography", *Journal of Medical Imaging and Health Informatics* 7 (6), pages. 1296-1301, 2017. (ISI Indexed, IF: 0.621).
50. D. N. F. A. Iskandar, A. B. Rahhal, **W. Abdul**, "Block Based Image Steganography in Spatial and Frequency Domain", *Journal of Telecommunication, Electronic and Computer Engineering (JTEC)* 9 (2-10), 2017, pages. 191-198.
51. I. Azam, N. Javaid, A. Ahmad, **W. Abdul**, A. Almogren, A. Alamri, "Balanced Load Distribution with Energy Hole Avoidance in Underwater WSNs", *IEEE Access*, 2017, Volume 5, pages. 15206 - 15221, 2017. (ISI Indexed, IF: 3.244).
52. F. Jabeen, Z. Hamid, **W. Abdul**, S. Ghouzali, A. Khan, S. Nawaz, H Ghafoor, "Enhanced Architecture for Privacy Preserving Data Integration in a Medical Research Environment", *IEEE Access*, 2017, Volume 5, pages. 13308 - 13326, 2017. (ISI Indexed, IF: 3.244).
53. A. Sher, N. Javaid, I. Azam, H. Ahmad, **W. Abdul**, S. Ghouzali, I. A. Niaz, F. A. Khan, "Monitoring square and circular fields with sensors using energy-efficient cluster-based routing for underwater wireless sensor networks", *International Journal of Distributed Sensor Networks* 13 (7), 1550147717717189, 2017. (ISI Indexed, IF: 1.239).
54. **W. Abdul**, A. Alzamil, H. Masri, S. Ghouzali, M. Hussain, M. AlZuair, "Fingerprint and Iris Template Protection for Health Information System Access and Security", *Journal of Medical Imaging and Health Informatics* 7 (6), 1302-1308, 2017. (ISI Indexed, IF: 0.621).
55. N. Javaid, H. Maqsood, **W. Abdul**, I. A. Niaz, A. Almogren, A. Alamri, M. Ilahi, "A localization based cooperative routing protocol for underwater wireless sensor networks", *Mobile Information Systems*, 2017, Article ID 7954175, 16 pages, 2017. doi:10.1155/2017/7954175, 2017 (ISI Indexed, IF: 0.849).
56. N. Javaid, F. Ahmed, I. Ullah, S. Abid, **W. Abdul**, A. Alamri, A. S. Almogren, "Towards Cost and Comfort Based Hybrid Optimization for Residential Load Scheduling in a Smart Grid", *Energies* 10 (10), 1546, 2017. (ISI Indexed, IF: 2.262).
57. N. Javaid, A. Sher, **W. Abdul**, I. A. Niaz, A. Almogren, A. Alamri, "Cooperative Opportunistic Pressure Based Routing for Underwater Wireless Sensor Networks", *Sensors* 17 (3), 629, 2017. (ISI Indexed, IF: 2.677).
58. D. Mahmood, N. Javaid, S. Ahmed, I. Ahmed, I. A. Niaz, **W. Abdul**, S. Ghouzali, "Orchestrating an Effective Formulation to Investigate the Impact of EMSs (Energy Management Systems) for Residential Units Prior to Installation", *Energies* 10 (3), 335,

2017. (ISI Indexed, IF: 2.262).
59. M. Akbar, N. Javaid, **W. Abdul**, S. Ghouzali, A. Khan, I. A. Niaz, M. Ilahi, “Balanced transmissions based trajectories of mobile sink in homogeneous wireless sensor networks”, *Journal of Sensors* 2017, (2017), Article ID 4281597 (ISI Indexed, IF: 1.704).
 60. N. Javaid, S. Javaid, **W. Abdul**, I. Ahmed, A. Almogren, A. Alamri, I. A. Niaz, “A hybrid genetic wind driven heuristic optimization algorithm for demand side management in smart grid”, *Energies* 10 (3), 319, 2017. (ISI Indexed, IF: 2.262).
 61. N. Javaid, M. Ejaz, **W. Abdul**, A. Alamri, A. Almogren, I. A. Niaz, N. Guizani, “Cooperative Position Aware Mobility Pattern of AUVs for Avoiding Void Zones in Underwater WSNs”, *Sensors* 17 (3), 580, 2017. (ISI Indexed, IF: 2.677).
 62. A. Ahmad, A Khan, N Javaid, H. M. Hussain, **W Abdul**, A. Almogren, A. Alamri, I. A. Niaz, “An Optimized Home Energy Management System with Integrated Renewable Energy and Storage Resources”, *Energies* 10 (4), 549, 2017. (ISI Indexed, IF: 2.262).
 63. A. Manzoor, N. Javaid, I. Ullah, **W. Abdul**, A. Almogren, A. Alamri, “An intelligent hybrid heuristic scheme for smart metering based demand side management in smart homes”, *Energies* 10 (9), 1258, 2017. (ISI Indexed, IF: 2.262).
 64. N. Javaid, S. M. Hussain, I. Ullah, M. A. Noor, **W. Abdul**, A. Almogren, A. Alamri, “Demand Side Management in Nearly Zero Energy Buildings Using Heuristic Optimizations”, *Energies* 10 (8), 1131, 2017. (ISI Indexed, IF: 2.262).
 65. W. Raza, F. Arshad, I. Ahmed, **W. Abdul**, S. Ghouzali, I. A. Niaz and N. Javaid, “An Improved Forwarding of Diverse Events with Mobile Sinks in Underwater Wireless Sensor Networks”, *Sensors*, Issue 11 Volume 16, 2016. (ISI Indexed, IF: 2.033).
 66. M. S. Hossain, G. Muhammad, S. K. M. M. Rahman, **W. Abdul**, A. Alelaiwi and A. Alamri, “Towards End-to-End Biometric-based Security for IoT Infrastructure,” *IEEE Wireless Communications*, Issue 5 Volume 23, 2016, pages. 44-51. (ISI Indexed, IF: 5.417).
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Conference Publications

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2. M. Hussain, F. Saeed, H. A. Aboalsamh, and **W. Abdul**, "DeepFingerPCANet: Automatic Fingerprint Classification Using Deep Learning," *2022 26th International Conference Information Visualisation (IV)*, Vienna, Austria, 2022, pp. 457-462, doi: 10.1109/IV56949.2022.00081.
3. S. U. Amin, H. Altaheri, G. Muhammad, M. Alsulaiman, and **W. Abdul**, “Attention based Inception model for robust EEG motor imagery classification”, 2021 IEEE international instrumentation and measurement technology conference (I2MTC), pp. 1-6, 2021.
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 7. N. Bousnina, S. Ghouzali, M. Mikram, and **W. Abdul**, "DTCWT-DCT watermarking method for multimodal biometric authentication", Proceedings of the 2nd International Conference on Networking, Information Systems & Security, NISS19, Rabat, Morocco, March 2019, pp. 1-7.
 8. F. M. Alawwad, **W. Abdul**, H. Behairy, A. Alasaad, "An improved LSBMR steganography based on message interleaving approach", 2017 International Conference on Electrical and Computing Technologies and Applications (ICECTA), Ras Al Khaimah, United Arab Emirates, November 2017, pages. 1-5.
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 11. N. Bousnina, S. Ghouzali, M. Lafkih, O. Nafea, M. Mikram, **W. Abdul** and D. Aboutajdine, "Watermarking for Protected Fingerprint Authentication", Intl. Conf. on Innovations in Information Technology (IIT'16), Al-Ain, UAE, November, 2016.
 12. **W. Abdul**, "Securing Biometric Authentication through Multimodal Watermarking" Third International Conference on Artificial Intelligence, Modelling and Simulation, December 2015, Kota Kinabalu, Malaysia.
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 14. S. Ghouzali and **W. Abdul**, "Private Chaotic Biometric Template Protection Algorithm", IEEE Intl. Conf. on Image Information Processing (ICIIP), Dec. 2013, Shimla, India.
 15. M. Bilal, S. Imtiaz, **W. Abdul** and S. Ghouzali, "Zero-steganography using DCT and Spatial Domain", ACS/IEEE Intl. Conf. on Computer Systems and Applications (AICCSA), May 2013, Fez, Morocco.
 16. M. Bilal, S. Imtiaz, S. Asif, **W. Abdul**, "Power efficient scalable hybrid processor architecture", Second International Conference on Digital Information and Communication Technology and it's Applications (DICTAP), May 2012, Bangkok, Thailand.
 17. **W. Abdul**, P. Carré, H. Saadane, P. Gaborit, "Watermarking using multiple visual

- channels for perceptual color spaces", IEEE International Conference on Image Processing (ICIP), October 2010, Hong Kong.
18. **W. Abdul**, P. Carré, P. Gaborit, "Human visual system-based color image steganography using the contourlet transform", SPIE 2010 - Media Forensics and Security II, USA.
 19. **W. Abdul**, P. Gaborit, P. Carré, "Private anonymous fingerprinting for color images in the wavelet domain", SPIE 2010 - Multimedia on Mobile Devices, USA.
 20. **W. Abdul**, P. Carré, P. Gaborit, "List decoding of Reed Solomon codes for wavelet based colour image watermarking scheme", IEEE International Conference on Image Processing (ICIP), November 2009, Cairo, Egypt.

Laboratory Setup

1. Communications Laboratory by Lucas Nulle at ASCS, King Saud University, Riyadh, Saudi Arabia, 2019.
2. Biometrics Laboratory funded by ZKTeco at CCIS, King Saud University, Riyadh, Saudi Arabia, 2020.

Seminars and Workshops

1. NCAAA and King Saud University – Quality Management System (KSU-QMS), Riyadh, Saudi Arabia, 2013.
2. King Saud University – Quality Management System (KSU-QMS), Riyadh, Saudi Arabia, 2013.
3. Steganography and Steganalysis, Paris, France, 2010.
4. Social Impacts of Sciences and Information Technology, Limoges, France, 2009.
5. Multiresolutional Analysis of Images, Poitiers, France, 2008.
6. Multimedia Protection, Lyon, France, 2007.
7. Workshop on Parallel Processing, Abbottabad, Pakistan, 2006.

Presentations

1. Biometric security and template protection through watermarking, **W. Abdul**, Center for Advanced Systems, C4ICAS, Riyadh, Saudi Arabia, 2016.
2. Color image steganography using the contourlet transform and the human visual system, **W. Abdul**, P. Carré, P. Gaborit, Steganography and Steganalysis, Paris, France, 2010.
3. Multiresolution color image watermarking, P. Carré, P. Gaborit, F. Largeteau, **W. Abdul**, Multimedia Protection, Lyon, France, 2007.

Membership in Professional Organizations

1. Member IEEE.

Awards

1. Best Faculty Award, College of Computer and Information Sciences, King Saud University, 2017.
2. Best Paper Award – D. N. F. A. Iskandar, A. B. Rahhal, **W. Abdul**, “Block Based Image Steganography in Spatial and Frequency Domain”, 10th International Conference on Information Technology in Asia, Kuching, Sarawak, Malaysia, 2017.

Links

1. King Saud University Faculty Website
<https://faculty.ksu.edu.sa/en/aabdulwaheed>
2. Google Scholar
https://scholar.google.com/citations?hl=en&user=WkmFwbcAAAAJ&view_op=list_works&sortby=pubdate
3. LinkedIn Profile
<https://www.linkedin.com/in/drabdulwadood/>