

CURRICULUM VITAE

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Birth: 24/10/1981
Marital Status: Married
Languages: Arabic, English and French

Enas Abdulhay is a motivated ambitious researcher and teacher, in spite of the challenges faced as an Arab woman and in spite of the tough complex dilemmas of family-work balancing & management.

Education

- **2019, Certificate of European Qualification for Scientific Research and Teaching Positions** in Europe Higher Education. The qualification has been obtained in the sections number **61 (Informatics Engineering, Control and Signal Processing)** and **69 (Neurosciences)**.
- **2009, Ph.D., Biomedical Engineering** - Joseph Fourier University (France).
Title: “A non-invasive method for beat-to-beat estimation of cardiac stroke volume in the respiratory inductive plethysmography signal: Double Decomposition Method”
- **2005, M.S., Biomedical Engineering** - Joseph Fourier University (France).
Title: “Inspiratory muscle activation timing and inspiratory effort level classification for a ventilated patient: towards a merging model of EMG indicators to improve the patient-ventilator agreement”
- **2003, B.Eng., Biomedical Engineering** -University of Science and Technology (Jordan).

Professional Experience

- *Dec 2022- Present*,
Full professor. Department of biomedical engineering, Jordan University of Science and Technology (Jordan).
- *Dec 2017- Dec 2022*,
Associate professor. Department of biomedical engineering, Jordan University of Science and Technology (Jordan).
- *Sep 2013 - Sep 2014*,
Acting chairperson. Department of biomedical engineering, Jordan University of Science and Technology (Jordan).
- *Sep 2010 – Dec 2017*,
Assistant professor. Department of biomedical engineering, Jordan University of Science and Technology (Jordan).
- *Feb 2010 - Sep 2010*,
Lecturer. Department of biomedical engineering, Jordan University of Science and Technology (Jordan).
- *Sep 2009 - Feb 2010*,
Lecturer. Polytech' Grenoble Engineering School (France).
- *Sep 2008 - Sep 2009*,
Lecturer. Department of electrical engineering, University of Grenoble1 (France).
- *Sep 2006 - Sep 2008*,
Lecturer. Department of biomedical engineering, University of Grenoble1 (France).
- *2003 - 2004*,
Biomedical equipment engineer. Princess Basma Hospital (Jordan).

Publications:

(Journals):

- **Enas Abdulhay**, Oliver Faust, Gustavo Ramirez, “Editorial: Artificial intelligence based diagnostics for neurological disorders”, *Frontiers in Human Neuroscience*, 17, (2023).
- **Enas Abdulhay**, Maha Alafeef, Hikmat Hadoush, and N. Arunkumar, “A 64-channel scheme for Autism detection via Scaled Conjugate Gradient-based Neural Network classification of EEG ripples’ complexity”, 40 (4), *Expert Systems* (2022).
- **Enas Abdulhay**, Maha Alafeef, Hikmat Hadoush, V. Venkataraman and N. Arunkumar, “EMD-based analysis of complexity with dissociated EEG amplitude and frequency

information: a data-driven robust tool -for Autism diagnosis- compared to multi-scale entropy approach”, *Mathematical Biosciences and Engineering*, 19 (5), 5031-5054, (2022).

- **Enas Abdulhay**, Ruba E. Khnouf , Yahia M. Karain, Taqwa K. Al Omari, Nourshan M. Ebeid, Tamara H. Al Muhtaseb, N.Arunkumar, M.Thilagaraj, Gustavo Ramirez-Gonzalez, “PolyMethyl MethaCrylate based Smart Microfluidic Point-of-Care Testing of Prothrombin Time and International Normalized Ratio through Optical Detection”, *Computational and Mathematical Methods in Medicine* , 2022: 5975228, (2022).
- **Enas Abdulhay**, Pierre-Yves Gumery, R. Ilango, S. Hariharasitaraman, M.Thilagaraj, N.Arunkumar, Gustavo Ramirez-Gonzalez, “Stroke Volume Estimation from Respiratory Inductive Plethysmography: Double Empirical Decomposition”. *Scientific Programming*. 2022: 9942367, (2022).
- **Enas Abdulhay**, Ahmad Allow, and Mohammad Al-Jalouy, Detection of Sickle Cell, Megaloblastic Anemia, Thalassemia, and Malaria through Convolutional Neural Network, *IEEE Xplore*, pp. 21-25, 10.1109/GC-ElecEng52322.2021.9788131, (2022).
- **Enas Abdulhay**, Pierre-Yves Gumery, Elise Aitocine, K-means clustering of Alae Nasi and Diaphragmatic muscles activation timing as an indicator to inspiratory effort level: A proof of concept, *IEEE Xplore*, pp. 144-149, doi: 10.1109/GC-ElecEng52322.2021.9788331, (2022).
- **Enas Abdulhay**, Maha Alafeef, Hikmat Hadoush, ArunKumar N, “Autism diagnosis via correlation between vectors of direct quadrature instantaneous frequency of EEG analytic normalized intrinsic mode functions”, *Expert Systems*, 39 (3): e12801, (2022).
- Wafaa Batayneh, **Enas Abdulhay** , Mohammad Alothman, “Comparing the efficiency of artificial neural networks in sEMG-based simultaneous and continuous estimation of hand kinematics”, *Digital Communications and Networks*, 10.1016/j.dcan.2021.08.002 , (2021).
- Shu Lih Oh, V. Jahmunah, N ArunKumar, **Enas W Abdulhay**, Raj Gururajan, N . A. Kadri, Edward J Ciaccio, Kang Hao Cheong, U Rajendra Acharya, “A novel automated autism spectrum disorder detection system”, *Complex and Intelligent Systems*, 7(5), 2399-2413, (2021).
- Mehmet Baygin, Sengul Dogan, Turker Tuncer, Prabal Datta Barua, Oliver Faust, N ArunKumar, **Enas Abdulhay**, Elisabeth Emma Palmer, U Rajendra Acharya, “Automated ASD detection using hybrid deep lightweight features extracted from EEG signals”, *Computers in Biology and Medicine*, 134: 104548, (2021).
- **Enas Abdulhay**, Maha alafeef, Hikmat Hadoush, N ArunKumar, “ Resting State EEG-based diagnosis of Autism via elliptic area of continuous wavelet transform complex plot”, *Journal of Intelligent and Fuzzy systems*, 39 (6), 8599-8607, (2020).
- **Enas Abdulhay**, “ A Special Issue on Predictive Intelligence in Health Informatics”, *J. Med. Imaging Health Inf.* 10(9), 1981-1984, (2020).
- Wafaa Batayneh, **Enas Abdulhay**, Mohammad Othman, “Prediction of Artificial Neural Networks’ Performance in Mapping sEMG to Finger Joint Angles via Signal pre-Investigation Techniques”, *Heliyon*, 6(4): e03669, (2020).
- Gustavo Ramirez-Gonzalez, **Enas Abdulhay**, “Preface on special section on cognitive computing for emerging internet of things “, *Supercomputing*, 76(2), 1082-1085, (2020).
- The-Hanh Pham, Jahmunah Vicnesh, Joel Koh En Wei, Shu Jih Oh, N. Arunkumar, **Enas Abdulhay**, Edward J Ciaccio, U Rajendra Acharya, “Autism spectrum disorder diagnostic system using HOS bispectrum with EEG signals”, *Int. J. Environ. Res. Public Health*, 17(3), 971, (2020)

- Mohd Khanapi Abd Ghani, Mazin Mohammed, N. ArunKumar, Salama Mustafa, Dheyaa Ibrahim, Mohammad Abdullah, Mustafa Jaber, **Enas Abdulhay**, Gustavo Gonzalez, M.A. Buhanuddin. “Decision Level Fusion Scheme for Nasopharyngeal Carcinoma Identification Using Machine Learning Techniques “. *Neural Computing and Applications*. 32(3), 625–638, (2020).
- **Enas Abdulhay**, Maha Alafeef, Loai Alzghoul, Miral Al Momani, Rabah Al Abdi, ArunKumar N, Roberto Munoz, and Victor Hugo C. de Albuquerque. ‘ ‘ Computer-aided Autism Diagnosis via Second-Order Difference Plot Area Applied to EEG Empirical Mode Decomposition’’. *Neural Computing and Applications*. 32(15), 10947-10956, (2020).
- **Enas Abdulhay**, Elamaran V., Chandrasekar M., Balaji V.S., Narasimhan K. “Automated diagnosis of epilepsy from EEG signals using ensemble learning approach”. *Pattern Recognition Letters*, 139, 174-181, (2020).
- Areen K Al-Bashir, Ruba E Khnouf, **Enas Abdulhay**, “Design, implementation, and evaluation of an introductory biomedical engineering course”, *Biomedical research*, 30(6), 30(1-8), (2019)
- **Enas Abdulhay**, Oliver Faust “Preface of virtual special issue on smart pattern recognition for medical informatics”, *Pattern Recognition Letters*, 128, 146-147, (2019)
- Ruba Khnouf, Dina Karasneh, **Enas Abdulhay**, Arwa Abdelhay, Weian Sheng, Z.Hugh Fan, “Microfluidics-based device for the measurement of blood viscosity and its modeling based on shear rate, temperature, and heparin concentration”, *Biomedical Microdevices*, 21(4): 80 (2019).
- **Enas Abdulhay**, “A Special Section on Cognitive Computing for Internet of Health Informatics Things”, *Medical Imaging and Health Informatics*, 9(6), 1234–1235, (2019)
- Hikmat Hadoush, Maha Alafeef, **Enas Abdulhay**. "Brain complexity in children with mild and severe autism spectrum disorders: analysis of multiscale entropy in EEG". *Brain Topography*, 32(5): 914-921, (2019).
- Anjan Gudigar, U Raghavendra, Edward J Ciaccio, N ArunKumar, U Rajendra Acharya, **Enas Abdulhay**, “Automated categorization of multi-class brain abnormalities using decomposition techniques with MRI images: A comparative study”, *IEEE Access*, 7, 28498-28509, (2019).
- S.K. Lakshmanprabu, K.Shankar, Rani.S.Sheeba, **Abdulhay Enas**, N.ArunKumar, Gustavo Ramirez, and J.Uthayakumar. “An effect of big data technology with ant colony optimization based routing in vehicular ad hoc networks: Towards smart cities”. *Journal of Cleaner Production*, 217, 584-593, (2019).
- Hikmat Hadoush, Maha Alafeef, **Enas Abdulhay**. "Automated identification for autism severity level: EEG analysis using empirical mode decomposition and second order difference plot". *Behavioural Brain Research*. 362, 240-248, (2019).
- H. Hadoush, M Alafeef, N Almasri, **E Abdulhay**, “Resting-state EEG changes after bilateral anodal transcranial direct current stimulation over mirror neurons in children with autism spectrum disorders: A pilot study”, *Journal of Brain Stimulation*, 12, 385-592, (2019).
- Luz Santamaria-Granados, Mario Munoz-Organero, Gustavo Ramirez-Gonzalez, **Enas Abdulhay**, N. ArunKumar, “Using Deep Convolutional Neural Network for Emotion Detection on a Physiological Signals Dataset (AMIGOS)”, *IEEE Access*. 7, 57-67, (2019).
- Mazin Mohammad, N Arunkumar, Mohd Khanapi Abd Ghani, Dheyaa Ibrahim, **Enas Abdulhay**, Gustavo Gonzalez, Victor Albuquerque. ‘ ‘ K-Means Clustering and Neural Network for Object Detecting and Identifying Abnormality of Brain Tumor’’. *Soft Computing*. 23(19), 9083–9096, (2019).

- Areen Al-Bashir, Mohammad Al-Abed, Hala Amari, Fadi Al-Rousan, Omar Bashmaf, **Enas Abdulhay**, Rabah Al Abdi, N ArunKumar, Tapas Bapu B R, Ahmad Al-Basheer. “Computer-based Cobb angle measurement using deflection points in adolescence idiopathic scoliosis from radiographic images”. *Neural Computing and Applications*. 31(5), 1547–1561, (2019).
- Vardhana M, ArunKumar N, Enas Abdulhay, Vishnuprasad P V. “IOT Based Real Time Traffic Control Using Cloud Computing”, *Cluster Computing*, 22(1), 2495-2504, (2019).
- **Enas Abdulhay**, “A special section on Emerging trends in health informatics”, *Journal of Medical Imaging and Health Informatics* 8 (9), 1855-1856, (2018).
- Rabah M. Al abdi, Ahmad E Alhitary, **Enas Abdulhay**, Areen K Al-bashir. “Objective detection of chronic stress using physiological parameters”. *Medical & Biological Engineering & Computing*. 56(12):2273-2286, (2018).
- Ahmed F.Hussein, N. ArunKumar, Gustavo Ramirez-Gonzalez, **Enas Abdulhay**, Joao Manuel R.S Tavares, Victor Hugo C. de Albuquerque. “A medical records managing and securing blockchain based system supported by a genetic algorithm and discrete wavelet transform”. *Cognitive Systems Research*. 52, 1-11, (2018).
- Ahmed Faeq Hussein, Arun Kumar N, Marlon Burbano-Fernandez, Gustavo Ramirez-Gonzalez, **Enas Abdulhay**, and Victor Hugo C. de Albuquerque. “An Automated Remote Cloud-Based Heart Rate Variability Monitoring System”. *Journal of IEEE Access*, 6, 77055-77064, (2018).
- Vardhana M, ArunKumar N, Sunitha Lasrado, **Enas Abdulhay** and Gustavo Ramirez Gonzalez. "Convolutional Neural Network for Bio-Medical Image Segmentation with Hardware Acceleration". *Cognitive Systems Research*. 50, 10-14, (2018).
- **Enas Abdulhay**, V. Elamaran, N. ArunKumar, and V. Venkataraman. "Fault-Tolerant Medical Imaging System with Quintuple Modular Redundancy (QMR) Configurations", *Journal of Ambient Intelligence and Humanized Computing*. 10.1007/s12652-018-0748-9 , 1-13, (2018).
- **Enas Abdulhay**, Arun Kumar, Narasimhan Kumarevelo, Elamaran Vellaiappan, Venkataraman Venkatachalam, "Gait and Tremor Investigation Using Machine Learning Techniques for the Diagnosis of Parkinson Disease", *Future Generation of Computer Systems*. 83, 366-373 (2018).
- **Enas Abdulhay**, Mazin Abed Mohammed, Dheyaa Ahmed Ibrahim, ArunKumar N, Venkataraman V. "Computer Aided Solution for Automatic Segmenting and Measurements of Blood Leucocytes Using Static Microscope Images ", *Journal of Medical Systems*. 42(4), 58(1-12), (2018).
- **Enas Abdulhay**, Rami Oweis, Areej Mohammad, and Lujain Ahmad. “Investigation of a wavelet-based neural network learning algorithm applied to P300 based brain-computer interface”. *Biomedical Research*, 28, SI: Artificial Intelligent Techniques for Bio Medical Signal Processing, (2018).
- SK Hafizul Islam, Mohammad S. Obaidat, Pandi Vijayakumar, **Enas Abdulhay**, Fagen Li, M Krishna Chaitanya Reddy. “A robust and efficient password-based conditional privacy preserving authentication and group-key agreement protocol for VANET “, *Future Generation Computer Systems*, 84, 216-227, (2018).
- **Enas Abdulhay**, Ruba Khnouf, Shireen Haddad and Areen Al-Bashir. “Improvement of medical content in the curriculum of biomedical engineering based on assessment of students’ outcomes”. *BMC Medical Education*, 17 : 129, 1-22 (2017).

- **Enas Abdulhay**, Luay Fraiwan, Maher Abu-Sharifa, Abobaker Al-Jafri and Ayman Dqaaq. "Multi-scale Tree Classifier Based Support for Spirometry Diagnosis", *J. Med. Imaging Health Inf.* 7 (8), 1734-1743 (2017).
- **Enas Abdulhay**, Abdelhay A, Albiss B.A, and Rami Oweis. "Non-Linear Modeling of the Dynamic Response of Single-Wall Carbon Nanotube SWNT Composites to NO₂ Gas in Air", *Materials Science Forum, Nano Engineering and Materials Technologies* 886, 91-96, (2017).
- **Enas Abdulhay**, Alafeef M, Abdelhay A and Al-Bashir A, "Classification of Normal, Ictal and Inter-ictal EEG via Direct Quadrature and Random Forest Tree", *Journal of Medical and Biological Engineering*, 37(6), 843–857, (2017).
- Arunkumar N., Ramkumar K., Venkatraman V., **Enas Abdulhay**, Steven Lawrence Fernandes, Seifedine Kadry, and Sophia Segal." Classification of focal and non focal EEG using entropies". *Pattern Recognition Letters*, 94, 112-117, (2017).
- Mohamed Shakeel, N. Arunkumar, **Enas Abdulhay**. "Automated multimodal background detection and shadow removal process using robust principal fuzzy gradient partial equation methods in intelligent transportation systems". *International Journal of Heavy Vehicle Systems*, 25 (3/4), 271 – 285, (2018).
- Areen Al-Bashir, Mohammad Al-Abed, Hala Amari, **Enas Abdulhay**, Fadi Al-Rousan and Rami Jahmani. "A clinical based semi-automatic algorithm for developmental dysplasia at the hip assessments in ultrasound images", *J. of Medical Imaging and Health Informatics*, 7 (8), 1789-1797, (2017).
- Arwa Abdelhay, Inshad Jum'h, **Enas Abdulhay**, Aseel Al-Kazwini and Mashael Alzubi. "Anodic oxidation of slaughterhouse wastewater on boron doped diamond BDD: Process variables effect", *Water Science and Technology*, 76(11-12), 3227-3235, (2017).
- Ruba Khnouf, **Enas Abdulhay**, Rawan Al Junaidi, Fatima Al Rifai, "Gait Signal Classification Using an In-House Built Goniometer and Naive Bayes Classifier," *Int. J. of Medical Engineering and Informatics*, 9(2), 134-144, (2017).
- **Enas Abdulhay**, Maha Alafeef, Hikmat Hadoush, Natheer Alomari, Mo'ath Bashayreh. "Frequency 3D Mapping and Inter-Channel Stability of EEG Intrinsic Function Pulsation : Indicators Towards Autism Spectrum Diagnosis". *IEEE Xplore*, 10.1109/JIEEEEC.2017.8051416 (2017).
- **Enas Abdulhay**, Ruba Khnouf, Abeer Bakeir, Razan Al-Asasfeh, and Heba Khader. "ElectroMyoGram Pattern Recognition for Real-Time Control of Upper Limb Prosthesis". *J. Med. Imaging Health Inf.* 6 (8), 1872–1880, (2016).
- **Enas Abdulhay**, Abdelhay A, Kilani A, Shwyat L and Rousan S. "Development of Arduino based low cost neuro-feedback for ADHD," *Biomedical Research*, Vol 27, SI: Computational Life Sciences and Smarter Technological Advancement, 31-37, (2016).
- Abdelhay A, **Abdulhay Enas**, Zeatoun L. and Albiss B., "Adsorption-Based Model for Single-Wall Carbon Nanotube Response to NO₂ Gas," *Adsorption Science and Technology*, 33(1), 37-43, (2015).
- Oweis R, **Abdulhay Enas**, Khayal A, Awad A., "An alternative respiratory sounds classification system utilizing artificial neural networks," *Biomedical Journal*, 38 (2), 153-161, (2015).
- **Abdulhay Enas**, Oweis, R, Alhaddad, A, Sublaban, F, Radwan, M, and Almasaeed, H., "Review Article: Non-Invasive Fetal Heart Rate Monitoring Techniques," *Biomedical Science and Engineering*, 2 (3), 53-67, (2014).

- **Enas Abdulhay** and Osama Tamimi, "Development of a Simulator for Patient-Ventilator Interaction in Non-Invasive Mask Ventilation," IEEE Xplore, 10.1109/BHI.2012.6211729 , 882- 885, (2012).
- Oweis. R† and **Abdulhay. E†** (†: **equal contribution**), "Seizure identification in EEG signals utilizing Huang and Hilbert transforms", Biomedical Engineering Online, 10 (38), 1-15, (2011).
- **Enas Abdulhay**, Fontecave J, Calabrese P, and Baconnier P, " Respiratory Inductive Plethysmography for Noninvasive Cardio-respiratory monitoring", Fundamental and Clinical Pharmacology, 25 (s1), 60-70, (2011).
- Julie Fontecave, **Abdulhay. E**, Pascale Calabrese, Pierre Baconnier and Pierre-Yves Gumery, "A model of mechanical interactions between heart and lungs," Phil. Trans. R. Soc. A, 367, 1908, 4741–4757, (2009).
- **Abdulhay. E**, Pierre-Yves Guméry, Julie Fontecave Jallon and Pierre Baconnier, "Cardiogenic Oscillations Extraction in Inductive Plethysmography: Ensemble Empirical Mode Decomposition", IEEE Xplore, 2240-3, 10.1109/IEMBS.2009.5335004 (2009).
- **Abdulhay. E**, et Baconnier. P, "Stroke Volume Estimation is Better when Glottis is closed, /L'Estimation du Volume d'Ejection Par La Thoracocardiographie est Meilleure Quand la Glotte est Fermée/", Innovation and Research in Biomedical Engineering IRBM, 29 (5), 297-301, (2008).
- **Abdulhay. E** and Baconnier. P, "Stroke volume estimation by thoracocardiography is better when glottis is closed". IEEE Xplore, 1074-7, 10.1109/IEMBS.2007.4352481 (2007).
- Thomas S, **Abdulhay E**, Baconnier P, Fontecave J, Francoise JP, Guillaud F, Hannaert P, Hernandez A, Le Rolle V, Maziere P, Tahy F, Zehraoui, "SAPHIR - a multi-scale, multi-resolution modeling environment targeting blood pressure regulation and fluid homeostasis". IEEE Xplore, 6648-51, 10.1109/IEMBS.2007.4353884 (2007).
- **Abdulhay. E**, Gumery P.Y and Aithocine E, " Inspiratory muscle activation timing and inspiratory effort level classification for a ventilated patient: towards a merging model of EMG indicators to improve the patient-ventilator agreement", ISM MIMB News, 2, 1-5 (2005).

(Conferences):

- **Enas Abdulhay**, Ahmad Allow, and Mohammad Al-Jalouy, Detection of Sickle Cell, Megaloblastic Anemia, Thalassemia, and Malaria through Convolutional Neural Network, IEEE Xplore, Global Congress on Electrical Engineering, Valencia, Spain, pp. 21-25, 10.1109/GC-ElecEng52322.2021.9788131, (2021).
- **Enas Abdulhay**, Pierre-Yves Gumery, Elise Aitocine, K-means clustering of Alae Nasi and Diaphragmatic muscles activation timing as an indicator to inspiratory effort level: A proof of concept, IEEE Xplore, Global Congress on Electrical Engineering, Valencia, Spain, pp. 144-149, 10.1109/GC-ElecEng52322.2021.9788331, (2021).
- Hikmat Hadoush, Maha AlAfeef, **Enas Abdulhay**, "Resting-state EEG changes after bilateral anodal transcranial direct current stimulation over mirror neurons in children with autism spectrum disorders: A pilot study", 3rd international brain stimulation conference, Vancouver (2019)

- **Enas Abdulhay**, Maha Alafeef, Hikmat Hadoush, Natheer Alomari, Mo'ath Bashayreh. "Frequency 3D Mapping and Inter-Channel Stability of EEG Intrinsic Function Pulsation: Indicators Towards Autism Spectrum Diagnosis". IEEE Xplore. The 10th International Electrical & Electronics Engineering Conference, Amman, DOI: 10.1109/JIEEEEC.2017.8051416 (2017).
- **Enas Abdulhay**, Abdelhay A, Albiss B.A, and Rami Oweis. "Modeling of Single-Wall Carbon Nanotube Response", International Conference of Materials Technology and Applications, Singapore, (2016).
- **Enas Abdulhay**, Abdelhay A, Kilani A, Shwyat L and Rousan S. "Development of neuro-feedback applied to ADHD", the 8th National Technology Parade, Irbid (2015).
- **Enas Abdulhay**, Loay Fraiwan, Rahma Al-Qura'n, Ameera Hamdan and Maysaa Rababah, "Differentiation between Bipolar Disorder (BD) and Attention Deficit Hyperactivity (ADHD) via Electroencephalography Signal Processing," International Symposium on Fundamental and Applied Sciences ISFAS, Tokyo, (2014).
- **Enas Abdulhay** and Osama Tamimi, "Development of a Simulator for Patient-Ventilator Interaction in Non-Invasive Mask Ventilation," IEEE Xplore, IEEE EMBS International Conference on Biomedical and Health Informatics BHI, Hong Kong, DOI: 10.1109/BHI.2012.6211729 (2012).
- A. I. Abu-Lail, A. R. Abdo and **Enas Abdulhay**, "Voice controlled wheelchair", First Arab Innovation Network Annual Conference-AINAC, Abu Thabi, (2012).
- **Enas Abdulhay** and Oweis R, "Accurate and Fast Seizure Identification in EEG," Funded Research Conference FRC, Jordan, (2012).
- **Abdulhay E**, "Cardiac Inductive Plethysmography: Accuracy Determination by Experimental and Modeling Approaches", BME Scientific Day, Irbid (2012)
- **E. Abdulhay**, Pascale Calabrese, Julie Fontecave-Jallon, Pierre-Yves Gumery, and Pierre Baconnier. "Respiratory Inductive Plethysmography for noninvasive cardio-respiratory monitoring". Congress of Physiology, Pharmacology and Therapeutic, Grenoble, (2011).
- Julie Fontecave-Jallon, **E. Abdulhay**, Pierre-Yves Gumery. "Décomposition Empirique Modale pour l'étude des interactions cardio-respiratoires volumétriques : une approche simulée". Group of Research and Study of Signal and Image Processing GRETSI, Bordeaux, (2011).
- **Abdulhay. E**, Pierre-Yves Guméry, Julie Fontecave Jallon and Pierre Baconnier, "Cardiogenic Oscillations Extraction in Inductive Plethysmography: Ensemble Empirical Mode Decomposition", *IEEE Xplore*, IEEE Eng Med Biol Soc., 2240-3, Minnesota, DOI: 10.1109/IEMBS.2009.5335004 (2009).
- Julie Fontecave-Jallon, **E. Abdulhay**, Pierre Baconnier and Pascale Calabrese. "Modélisation mathématique des échanges de gaz respiratoires dans l'organisme". Conference of Theoretical Biology, St-Flour, (2009).
- **Abdulhay. E**, Pierre-Yves Guméry, Julie Fontecave and Pierre Baconnier, "Suggested CR Signal Processing Tools for Newborn Apnea Syndrome", GDR, Paris, (2009).
- Julie Fontecave, **Abdulhay. E**, Pierre Baconnier, and Pascale Calabrese. "Mechanical Cardiorespiratory model and Interactions", Theoretical Biology Conference, St-Flour, (2008).
- **Abdulhay. E**, Pierre-Yves Guméry and Pierre Baconnier, "Extraction of Cardiogenic oscillations by Empirical Decomposition", Medical Research Day, Grenoble (2008).

- **Abdulhay. E** and Baconnier. P, "Stroke volume estimation by thoracocardiography is better when glottis is closed". *IEEE Xplore*, IEEE Eng Med Biol Soc., 1074-7, Lyon. DOI: 10.1109/IEMBS.2007.4352481 (2007).
- Thomas S, **Abdulhay E**, Baconnier P, Fontecave J, Francoise JP, Guillaud F, Hannaert P, Hernandez A, Le Rolle V, Maziere P, Tahy F, Zehraoui, "SAPHIR - a multi-scale, multi-resolution modeling environment targeting blood pressure regulation and fluid homeostasis". *IEEE Xplore*, IEEE Eng Med Biol Soc, 6648-51, Lyon. DOI : 10.1109/IEMBS.2007.4353884 (2007).

(Manuscripts-first round of revision):

- Mehmet Baygin, Sengul Dogan, Turker Tuncer, Prabal Datta Barua, Oliver Faust, N.ArunKumar, **Enas Abdulhay**, Elisabeth Emma Palmer, Edward J.Ciaccio, and U. Rajendra Acharya, "Scutoids pattern and wavelet packet decomposition of electroencephalogram signals for accurate automated autism detection".
- **Enas Abdulhay**, Maha Alafeef, Hikmat Hadoush, and N. ArunKumar, "Investigation of the impact of autism on EEG spectral bands through machine learning".
- Sema Athamnah, Ibrahim Athamnah, and **Enas Abdulhay**, "Assistive sip and puff prototype for individuals with communication-movement disabilities during Covid-19 pandemic".

(Submitted):

- T. Trippenbach, L. Heyer, E. Aitocine, P-Y. Guméry, **Abdulhay. E** and P. Baconnier, "Relative recruitment of inspiratory muscles during spontaneous and imposed breathing patterns in healthy humans at constant CO2 levels". *Journal of Applied Physiology*.
- **Enas Abdulhay**, Ruba E. Khnouf , Yahia M. Karain, Taqwa K. Al Omari, Nourshan M. Ebeid, Tamara H. Al Muhtaseb, " PolyMethyl MethaCrylate based Smart Microfluidic Point-of-Care Testing of Prothrombin Time and International Normalized Ratio through Optical Detection", International Conference of Materials Technology and Applications 2021, Japan - withdrawn by Enas after submission..
- **Enas Abdulhay**, Maha Alafeef, Hikmat Hadoush, Natheer Alomari, Mo'ath Bashayreh. "Frequency 3D Mapping and Inter-Channel Stability of EEG Intrinsic Function Pulsation: Indicators Towards Autism Spectrum Diagnosis". *JEA Journal of Electrical Engineering*.
- **Enas Abdulhay**, P-Y Gumery, Julie Fontecave, " Cardiogenic Extraction by Empirical Decomposition in Inductive plethysmography signal". *IEEE transactions of Biomedical Engineering*.
- Wafaa Batayneh, **Enas Abdulhay**, Mohammad Alothman ,'' Prediction of the performance of machine learning approaches in mapping sEMG to finger joint angles via pre-signal investigation technique''. *AUS-ICMS'20 – Withdrawn by Wafaa after submission*.
- **Enas Abdulhay**, Kilani A, Shwyat L and Rousan S. " ADHD neuro-feedback'', *NTP'8*. Withdrawn by Kilani after submission.
- **Abdulhay. E**, Pierre-Yves Guméry, Julie Fontecave and Pierre Baconnier, Simple Cardio-Respiratory Model Applied to the Validation of Cardiogenic Extraction by Empirical Decomposition - Congress of Medical Physics and Biomedical Engineering 2009 – Munich – Germany -Withdrawn by Enas after submission-.
- **Abdulhay. E**, Maha Alafeef, Loai Alzghoul, Miral Al Momani, Rabah Al Abdi, "Second-Order Difference Plot Area: A Discriminative Feature Applied To EEG Empirical Mode

Scientific Projects:

- Co-principal investigator in the proposal recently submitted for the scientific project: “Smart wearable device for detection and classification of diabetes polyneuropathy severity” to be funded by a matching grant between Jordan University of Science and Technology and the Malaysian Kebangsaan University (~50,000\$). (2022).
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- Local mentor in the educational project “ReachSci mini PhD program” funded by University of Cambridge and Cambridge Global Challenges. (2022).
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- Co-principal investigator in the scientific project "A cell sorting and recognition microfluidic device", Scientific Research & Innovation Support Fund SRSF/Ministry of Scientific Research and Higher Education, Jordan, (~200,000\$) (2021-2023).
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- Co- principal investigator in the research grant “Micro-cytometer for recognition and separation of circulating tumor cells (CTCs) using impedance and dielectrophoretic properties”, JUST deanship of research, Jordan, (~30,000\$) (2020).
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- Principal investigator in the scientific project "Quantitative Electroencephalography for Autism Diagnosis", Scientific Research Support Fund SRSF/Ministry of Scientific Research and Higher Education, Jordan, (~135,000\$) (2015- 2019).
Contact : reef.almajali@mohe.gov.jo
- Co- principal investigator in the research grant "Estimation of joint kinematics from sEMG and accelerometry”, JUST deanship of research, Jordan, (~20,000\$) (2017-2019). Contact: gtash@just.edu.jo
- Collaborator in a focus group in the American National Science Foundation-funded project # 1561430/ 1561507-HRD to study women's decisions to pursue engineering in diverse cultural contexts. This project supports the study of female engineers’ decision-making in four predominately Muslim countries that have notably higher proportions of women in engineering than in the US. (2017)
Contact : nehal@wsu.edu
- Co- principal investigator in the research grant "Design and realization of a micro-viscometer for hematological and cardiovascular disease diagnosis", JUST deanship of research, Jordan (~10,000\$) (2012). Contact : gtash@just.edu.jo
- Principal investigator in the research grant "Accurate and Fast Detection of Seizure", JUST deanship of research, Jordan (~10,000\$). (2011). Contact : gtash@just.edu.jo
- Co- principal investigator in the research grant, “Study of Seizure Characteristics”, JUST deanship of research, Jordan (~10,000\$) (2010). Contact : gtash@just.edu.jo

- Co- principal investigator in the French scientific project SAPHIR: ‘‘a Systems Approach for Physiological Integration of Renal, cardiac, and respiratory functions’’ ANR-06-BYOS-0007-01 which is the French part of the European project VPH ‘‘Virtual Physiological Human’’, France, (~350,000\$) (2007-2010).
Contact: stephen-randall.thomas@u-psud.fr
- Co-investigator in the scientific project ‘‘Customized monitoring of soldier health state’’ financed by DGA (the French Ministry of Defense), France, (~80,000\$) (2009).
Contact : Pierre-Yves.Gumery@univ-grenoble-alpes.fr
- Co- principal investigator in the Franco-Canadian scientific project ‘‘Relative Recruitment of Inspiratory Muscles during Spontaneous and Imposed Breathing Patterns in Healthy Humans at Constant CO2 Levels’’, PRETA research fund, France, (~30,000\$) (2008). Contact : teresa.trippenbach@mcgill.ca
- Co- principal investigator in the scientific project VEQU ‘‘Ventilation with a good quality of patient-ventilator agreement’’, PRETA research fund, France, (~20,000\$) (2005). Contact: Pierre-Yves.Gumery@univ-grenoble-alpes.fr

Leading activities:

- Guest editor in Concepts in Magnetic Resonance Part A, Bridging Education and Research ‘‘Artificial Intelligence and MRI as a Tool to Improve Clinical Diagnosis’’ (2022).
<https://www.hindawi.com/journals/cmra/osi/>
- Research Topic Guest editor in Frontiers in Computational Neuroscience/Frontiers in Human Neuroscience (Frontiers) ‘‘Artificial Intelligence based diagnostics for neurological disorders’’, (2021).
<https://www.frontiersin.org/research-topics/21359/artificial-intelligence-based-diagnostics-for-neurological-disorders>
- SI Guest editor in Journal IEEE Transactions on Industrial Informatics (IEEE) ‘‘Patient driven data acquisition for next generation healthcare industry’’, (2021).
<http://www.ieee-ies.org/pubs/transactions-on-industrial-informatics>
- Editor in Computer Applications in Healthcare and Medicine (American Scientific Publishers), (2021).
<http://www.aspbs.com/cam.html>
- SI Guest editor in Journal of IET Image Processing (IET) ‘‘Advanced AI Based Image Diagnostics for Cancer’’ (2021).
<https://ietresearch.onlinelibrary.wiley.com/hub/journal/17519667/homepage/cfp>
- SI Guest editor in Journal of Expert Systems (Wiley) ‘‘Expert Systems for Wireless Applications of Bio-Signals’’ (2021).
https://onlinelibrary.wiley.com/page/journal/14680394/homepage/special_issues.htm
- SI Guest editor in Journal of Scientific Programming ‘‘Advanced Scientific Programming Methods for Health Informatics’’ (2021).
<https://www.hindawi.com/journals/sp/si/815036/>

- SI Guest editor in Journal of Healthcare Engineering “Explainable Artificial Intelligence for Medical Applications” (2021).
<https://www.hindawi.com/journals/jhe/si/658251/>
- SI Guest editor in Journal of Intelligent Automation & Soft Computing (Tech Science Press). “Current Trends on Cognitive Computing “. (2020)
https://www.techscience.com/iasc/special_detail/ctcc
- SI Guest editor in Journal of Medical Imaging and Health Informatics (American Scientific Publishers). “ Explainable Artificial intelligence for medical applications”. (2020)
<http://www.aspbs.com/jmihi.html>
- SI Guest editor in Journal of Medical Imaging and Health Informatics (American Scientific Publishers). “ Predictive Intelligence in Health Informatics”. (2019)
http://www.aspbs.com/jmihi/contents_jmihi2020.htm#v10n9
- SI Guest editor in Artificial Intelligence in Medicine (Elsevier). “Deep learning Methods for Medical Applications”. (2019).
<https://www.journals.elsevier.com/artificial-intelligence-in-medicine/call-for-papers/deep-learning-methods-for-medical-applications>
- SI Guest editor in Safety Science (Elsevier). “Smart Safety Systems in Industry”. (2020).
<https://www.journals.elsevier.com/safety-science/call-for-papers/special-issue-smart-safety-systems-for-industry>
- SI Guest editor in Measurement (Elsevier). “Intelligent Industrial IoT Network”. (2019).
<https://www.journals.elsevier.com/measurement/call-for-papers/special-issue-on-intelligent-industrial-iot-network>
- Editor in Journal of Medical Systems (Springer). (Starting from 2018).
<https://www.springer.com/public+health/journal/10916?detailsPage=editorialBoard>
- Editor in Journal of Applied Soft Computing (Elsevier). (2018-2019).
<https://www.journals.elsevier.com/applied-soft-computing/editorial-board>
- Editor in Journal of Medical Imaging and Health Informatics (American Scientific Publishers). (Starting from 2018).
http://www.aspbs.com/jmihi/editorial_jmihi.htm
- SI Guest editor in International Journal of Computers and Applications (Taylor and Francis). “Emerging Cognitive Algorithms for Internet of Things”. (2018).
<http://explore.tandfonline.com/cfp/est/jmr05103-si-tjca-emerging-cognitive-algorithms-for-internet-of-things>
- SI Guest editor in Journal of Medical Imaging and Health Informatics (American Scientific Publishers).” Cognitive Computing for Internet of Health Informatics Things”. (2018).
<http://www.aspbs.com/jmihi.html>

- SI Guest editor in Future Generation Computer Systems (Elsevier). “Cognitive Computing for Internet of Medical Things”. (2018).
<https://www.journals.elsevier.com/future-generation-computer-systems/call-for-papers/special-issue-on-cognitive-computing-for-internet-of-medical>
- SI Guest editor in Journal of Supercomputing (Springer). “Cognitive Computing For Emerging Internet of Things”. (2018).
<https://link.springer.com/journal/11227>
- SI Guest editor in Cognitive Systems Research (Elsevier). “Machine Learning for Emerging Cognitive Internet of Things”. (2018).
<https://www.journals.elsevier.com/cognitive-systems-research/call-for-papers/machine-learning-for-emerging-cognitive-internet-of-things>
- SI Guest editor in Computers and Electrical Engineering (Elsevier). "Hybrid Artificial Intelligence and Machine Learning Applications" (2018).
<https://www.journals.elsevier.com/computers-and-electrical-engineering/special-issues>
- SI Guest editor in Pattern Recognition Letters (Elsevier). "Smart Pattern Recognition for Medical Informatics SPRMI" (2018).
<https://www.journals.elsevier.com/pattern-recognition-letters/call-for-papers/virtual-special-issue-on-smart-pattern-recognition-for-medical>
- SI Guest editor in Cluster Computing Journal (Springer). "Future Hybrid Machine Learning in Cloud Computing" (2018).
<https://link.springer.com/journal/10586>
- SI Guest editor in Journal of Medical Imaging and Health Informatics (American Scientific Publishers)." "Emerging Trends in Health Informatics" (2018).
<http://www.aspbs.com/jmihi.html>
- Major member in the Technical Program Steering Committee of the 5th IEEE Middle East and Africa Conference on Biomedical Engineering (MECBME' 2020), (2018-2020). <http://www.mecbme2020.yu.edu.jo>
- SI Guest editor in Journal of Grid and Utility Computing (Inderscience). "Hybrid Computing Methods –A utility Perspective" (2017).
<https://www.inderscience.com/jhome.php?jcode=ijguc>
- Head of the BME committee of Scientific Research at Jordan University of Science & Technology (2018).
- Leading a number of medical days for free 64 channel-EEG recording altogether with free EEG based diagnosis & consultation dedicated to children with neuro-developmental issues (~ 500 children in families with financial difficulties) (2015-2018).
- Head of the BME department committee of Quality Assurance and Academic Development (2017).
- Establishing the new 'Laboratory of Physiological Modeling and Control' at Jordan University of Science and Technology. Dr. Enas Abdulhay has been in charge of preparing and developing several computer-based modeling tools, programs, activities

and manuals that help students understand, analyze and implement different concepts of physiological simulation (2016).

- Establishing the first phase of the new 'Laboratory of Engineering Tools' at Jordan University of Science and Technology. Dr. Enas Abdulhay was in charge of preparing and developing several computer-based programs, activities and manuals that help students understand, analyze and implement different concepts of engineering programming (2015).
- Leading the process of accreditation of the BME department, at Jordan University of Science and Technology, by the Board for Engineering and Technology (ABET) in United States of America USA and the Engineering Accreditation Commission (EAC) in USA after the review of the detailed self-study report (S.S.R ~550 pages) presented by Enas Abdulhay who was in charge of writing, revising and submitting the S.S.R that included a deep quantitative assessment of the department, as well as in charge of supervising, revising and approving the collection of department constituencies' (stake-holders) feedback via surveys to improve the department outcomes. She was also the head of the BME department ABET committee and its representative in the faculty of Engineering in JUST (2013-2015). Furthermore, Enas Abdulhay was a very active contributor in the following subsequent accreditation cycle.
- Acting chairperson of the BME department (2013-2014).
- Head of the BME department curriculum committee in charge of study plan improvement. The improved study plan has been approved by the ABET/EAC in USA (2013-2014).
- Head of the BME tendering and development committee in charge of complete innovation of the Laboratory of Biomechanics and Biomaterials, Laboratory of Physiological Modeling and Control, and Laboratory of Engineering Tools, as well as renovation of the other laboratories in the BME department (2013-2014).
- Major member in the steering committee of the 7th National Technology Parade funded by the UN entity for Gender Equality and the Empowerment of Women. In addition, reviewer and evaluator of the "Award of the Best Graduation Project in the Jordanian Universities" in the parade. (2014)
- Collaborator in a proposal targeting the foundation of Master degrees at Jordan University of Science and Technology in collaboration with Nantes Engineering School in France (2014).
- Major member in a round table discussion, headed by her majesty Queen Rania and JUST president (Dr. Abdalla Malkawi), about solutions to obstacles faced by women in higher education (2013)
- Major member in a round table discussion, headed by the senator (Mr. Jamil Al-Nimri), about solutions to obstacles faced by BME students, Yarmouk University, Jordan (2013)
- Local academic supervisor of students' practical training (2012/2013).

- Collaborator in a TEMPUS project proposal targeting the establishment of a BME Master program at Jordan University of Science and Technology in collaboration with the European Union. (2012)
- Representative of Biomedical Engineering Department in JUST Engineering Faculty Council (2010/2011, 2012/2013).
- Reviewer for international journals such as, Journal of Biometrics, International Journal of Reasoning-based Intelligent Systems, International Journal of Applied Biotechnology & Bioengineering...etc, as well as for international conferences such as IEEE Jordan Conference of Applied Electrical Engineering and Computer Technology, International Conference on Communications and Electronic Systems...etc. In addition, reviewer of several research proposals. Furthermore, Enas gave consultations to a number of start-up medical businesses, as well as to the Jordanian national recruitment service in the BME section.
- Representative of Ph.D students, PRETA scientific team, France (2008).

Awards:

- The article “Automated identification for autism severity level: EEG analysis using empirical mode decomposition and second order difference plot” appeared in QS WOW News as a success story (2019).
Link: <https://qswownews.com/a-team-of-just-researchers-proposed-a-new-method-for-automated-identification-for-autism-severity-level/>
- “Best Paper Award” in the 10th International Electrical & Electronics Engineering Conference organized in cooperation with the Institute of Electrical and Electronics Engineers (IEEE) and Institution of Engineering and Technology (IET), for the paper entitled: “Frequency 3D Mapping and Inter-Channel Stability of EEG Intrinsic Function Pulsation: Indicators towards Autism Spectrum Diagnosis”, published in *IEEE Xplore*, Jordan (2017).
- The paper, of Dr. Enas, titled: “Classification of Normal, Ictal and Inter-ictal EEG via Direct Quadrature and Random Forest Tree”, has been selected by Springer as one of the best ten papers published in the year in “Journal of Medical and Biological Engineering”. Springer has therefore offered to fully cover the fees (3000\$ per paper) of the option of open access publishing for the paper (2017).
- “First Position Award” for the project “Voice Controlled Wheelchair” in the First Arab Innovation Network Annual Conference-AINAC organized by Cambridge Judge Business School Centre for Entrepreneurial learning in United Emirates (2012).
- Full PhD scholarship/fellowship, at the Laboratory of Medical Engineering Research (University of Joseph Fourier - France), financed by the French Ministry of Scientific Research and Higher Education. (2005-2009).
- Attendance of "Summer School for Outstanding Ph.D. Students" funded by the European Union and Karl-Franzens-Universität Graz in the Castle Campus at Schloss Seggau in Leibnitz, Austria (2007).
- Listed as "The Best Master Thesis in Biomedical Signal Processing & Modeling", MIMB, Joseph Fourier University, Grenoble, France (2005).

Courses Taught:

- ADVANCED SIGNAL AND IMAGE PROCESSING
- BIOMEDICAL INSTRUMENTATION LAB
- BIOMEDICAL INSTRUMENTATION
- BIOSTATISTICS
- DIGITAL SIGNAL PROCESSING
- DIGITAL LOGIC DESIGN AND COMPUTER ARCHITECTURE LAB
- DIGITAL SIGNAL PROCESSING & PATTERN RECOGNITION
- ENGINEERING TRAINING
- INTRODUCTION TO LINEAR SYSTEMS
- MEDICAL ELECTRONICS LAB
- MICROCONTROLLERS AND EMBEDDED LAB
- PHYSIOLOGICAL MODELLING
- PHYSIOLOGICAL MODELING AND CONTROL SYSTEMS
- PHYSIOLOGICAL MODELING AND CONTROL SYSTEMS LAB
- SEMINAR IN BIOMEDICAL ENGINEERING
- STATISTICS FOR BIOMEDICAL ENGINEERS
- INTRODUCTION TO PHYSIOLOGICAL MODELING
- TIME-FREQUENCY SIGNAL PROCESSING TOOLS
- INTRODUCTION TO CIRCUIT ANALYSIS
- COMPUTER-BASED ENGINEERING TOOLS
- VIRTUAL INSTRUMENTATION LAB
- EXPERIMENTAL PHYSIOLOGY

Graduation projects and Master theses

(Master theses):

The BME department started to offer Master program in 2018/2019. Since then, Enas Abdulhay has supervised/co-supervised five Master theses.

Already defended:

- “Investigation of the efficiency of Artificial Neural Networks to estimate hand kinematics from surface electromyography”, JUST, (2018).
- “Microfluidic device for hydro-dynamically focused circulating tumor cells separation using dielectrophoresis” in the department of biomedical engineering, JUST, (2022).
- “Global Modelling and Predicting of Thermal Conductivity of Nanofluids Using an ensemble of Different Tree-based Gradient Boosting Algorithms and Optimized Deep Neural Networks”, JUST, (2022)
- “Chronological Age and Biological Gender Prediction of Epileptic Patients via Multimodal MRI-based Deep Neural Networks”, JUST, (2022)

(Selected Senior design projects):

Enas Abdulhay has been the advisor/co-advisor of a number of senior graduation projects. She also co-supervised senior graduation projects when she was lecturer and PhD student.

- Development of neuro-feedback applied to ADHD
- Classification of key spectral and temporal features in ADHD EEG signals
- Prothrombin time & INR measurement using IR light transmission
- Multi-measurement non-invasive device
- Non-invasive device for diagnosis of Hyperbilirubinemia
- Control of upper limb prosthetic according to EMG classification
- Design of EMG classification system for myoelectric control
- Bipolar disorder and hyperactivity detection from EEG
- Design of digital pulmonary function test
- Electrical goniometer
- Voice controlled wheelchair
- Tonic-clonic seizure onset detection by sEMG parameters
- Automatic sleep stage classification using Discrete Wavelet Transform.
- Obstructive sleep apnea treatment based on end-tidal CO₂
- Extraction of cardiac mechanical activity using RIP.
- Neuropathy diabetes diagnosis and therapy device.
- Braille watch
- Epileptic seizure detection and prediction device
- Respiratory effort classification
- Voice controlled systems and speech classification
- Classification of respiratory sounds utilizing artificial neural networks (ANN)
- Blood viscosity models using microfluidic device
- Seizure identification via DWT using a constructed electroencephalogram
- Capnography
- PC- based automated diagnostic spirometer
- Smart wheelchair control system

Committee Membership:

Served as a member of various scientific and educational councils and committees:

- BME department council (&Head in 2013-2014) in Jordan and in France.
- BME department scientific research committee (&Head in 2018).
- BME department graduate studies committee
- BME department curriculum committee (&Head in 2013-2014)
- BME department ABET accreditation committee (&Head of committee in 2013-2014)
- BME department practical training committee (&Head in 2013).
- BME department social committee
- BME department tendering committee (&Head in 2014).
- BME department courses equivalency committee
- Engineering Faculty ABET accreditation committee
- Engineering Faculty Council
- Engineering Faculty Committee of Development and Quality Assurance
- Engineering Faculty Committee of Scientific Research.
- Internal and external examiner in a number of Master and senior design project defense committees at Jordanian and Foreign universities.

- Major member in the Technical Program Steering Committee of the 5th IEEE Middle East and Africa Conference on Biomedical Engineering (MECBME' 2020), (2018-2020).
- Major member in the committee of monitoring for students' election process in the BME department (2014).
- Major member in the steering committee of the 7th National Technology Parade funded by the UN entity for Gender Equality and the Empowerment of Women (2014)
- Representative of PhD students, PRETA scientific team, France