

Curriculum Vitae

Bashir I. Morshed, Ph.D.

Associate Professor

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HIGHLIGHTS

✧ **Academic:**

- Associate Professor (tenured), Computer Science (CS) dept., Texas Tech University (2020 – now)
- Associate Professor (tenured), Electrical & Computer Engineering (EECE) dept., University of Memphis (2017 – 2020); Assistant Professor (tenure-track), EECE, U. of Memphis (2011 – 2017)
- Ph.D., Department of Electronics, Carleton University, Ottawa, Ontario, Canada (2004 - 2010)
- M.A.Sc., Electrical and Computer Engineering, University of Windsor, Canada (2002 - 2004)
- B.Sc., Bangladesh University of Engineering & Technology (BUET), Dhaka, Bangladesh (2001)

✧ **Research Area:** Cyber-physical system (CPS), inkjet-printed flexible electronics, wearables, real-time AI for signal processing and disease monitoring, edge-computing, smart-health, embedded systems, hardware-software co-design, mHealth, smart and connected community.

✧ **Research Project Funding:** Multiple internal and external research grants, total: ~\$1M (\$650k from NSF) as PI and ~\$4.5M (\$3.5M from NSF/NIH) as a collaborator. Recent projects are:

- "CPS: Small: Inkjet Printed Flexible Electronic CPS with Context-aware Events of Interest Detection", Role: PI, Agency: CISE CPS, National Sci. Foundation (**NSF**), 2020-2022 (3 yrs), \$500k.
- "EAGER: Events-of-interest Capture Using Novel Body-worn Fully-passive Wireless sensors for Smart and Connected Community", Role: PI, Agency: CISE S&CC, **NSF**, 2016-2020, \$150k.
- "Direct Inkjet Printable Low-voltage Active Flexible Electronic Component Fabrication", Role: PI, Agency: University of Memphis Research Investment Fund (UMRIF), 2017-2019, \$40k.
- "Hybrid nanoparticles for capture and detection of circulating tumor cells", Role: Co-I, PI: Dr. Huang (Chemistry, U. of Memphis), R15, National Institute of Health (**NIH**), 2015-2018, \$400k.

✧ **Teaching Strengths:** Embedded Systems, Computer Organization, Computer Architecture & Interfacing, Microprocessor, MIPS and Intel Assembly, Bioelectronics, Cyber Physical Systems.

✧ **Publications:** 2 issued USPTO patents, 30+ peer-reviewed journals, 3 invited conference papers, 50+ refereed conference proceedings, 50+ posters and presentations, and 15+ invited talks.

✧ **Awards and Distinctions:** Faculty Research Award (2020), Faudree Professorship (2019-2020), IEEE Senior Member (2019), MHTI Scholar by NIH (2018), Best conference paper award (2018), Ontario Graduate Scholarship (2007-08), OGS Science and Technology (2008), Indira Gandhi Memorial Fellowship (2004, 2006), Canadian Commonwealth Fellowship (2002-2004), Dean's list (1994-'98).

1. EDUCATION

Degree	Passing Year	Major/Department	University/Institute
B.Sc.	2001	Electrical and Electronics Engineering (EEE)	Bangladesh University of Engineering and Technology (BUET), Bangladesh
M.A.Sc.	2004	Electrical and Computer Engineering (ECE)	The University of Windsor, Windsor, ON Canada
Ph.D.	2010	Electrical and Computer Engineering	Carleton University, Ottawa, ON Canada
PDF	2010-2011	Medical Devices Innovation Institute (MDI2)	The University of Ottawa Heart Institute, Ottawa, ON Canada

2. CAREER

Employment:

Duration	Position	Department / Institute	Organization
2020 – now	Associate Professor	Computer Science (CS)	Texas Tech University, Lubbock TX USA
2017 – 2020	Associate Professor	Electrical and Computer Engineering (EECE)	The University of Memphis, Memphis TN USA
2011 – 2017	Assistant Professor	Electrical and Computer Engineering (EECE)	The University of Memphis, Memphis TN USA
2011 - 2011	Project Lead (part-time)	Applied Research and Innovation (ARI)	Algonquin College, Ottawa ON Canada
2009 - 2011	Instructor (part-time)	School of Advanced Technology (SAT)	Algonquin College, Ottawa ON Canada
2009 – 2010	Research Scientist	Cardiovascular Devices Division (CDD)	The University of Ottawa, Ottawa ON Canada
2004 - 2009	Teaching Assistant	Department of Electronics (DoE)	Carleton University, Ottawa ON Canada
2004 - 2009	Research Assistant	Department of Electronics (DoE)	Carleton University, Ottawa ON Canada
2003 - 2004	Graduate Assistant	Electrical and Computer Engineering (ECE)	The University of Windsor, Windsor ON Canada
2002 - 2004	Research Assistant	Electrical and Computer Engineering (ECE)	The University of Windsor, Windsor ON Canada
2001 - 2001	Instructor (part-time)	Institute of Information and Communication Technology (IICT)	Bangladesh University of Engineering and Technology (BUET), Bangladesh
2001 - 2002	Lecturer, Faculty (full-time)	Electrical and Electronic Engineering (EEE)	Bangladesh University of Engineering and Technology (BUET), Bangladesh

3. RESEARCH

Research Grant Awarded (partial list):

PI: Principal Investigator, Co-PI: Co-Principal Investigator, Co-I: Co-Investigator, SP: Senior Personal

Proposal Title	Role	Collaborators	Agency	Amount	Start	End
CPS: Small: Inkjet Printed Flexible Electronic CPS with Context-aware Events of Interest Detection	PI	CoPI: Fujiwara, Hewitt, Andrasik, Kabra	NSF CPS	\$499,841	1/20	12/22
Learners' Data Institute: Harnessing the Data Revolution to Improve the Effectiveness, Efficiency, and Engagement of the Learning Ecosystem	SP	PI: Russ (IIS, UM); CoPIs: Grassier, Pavlik, et al.	NSF DIRSE	\$2,586,708	1/20	12/21

Proposal Title	Role	Collaborator(s)	Funding	Amount	Period
Direct Inkjet Printable Low-voltage Active Flexible Electronic Component Fabrication	PI	Co-PI: Fujiwara (Chemistry, U Memphis); et al	UM/Research Investment Fund	\$40,000	2017-2019
EAGER: Events-of-interest Capture Using Novel Body-worn Fully-passive Wireless sensors for S&CC	PI	Co-PI: Harmon (Public Health, U Memphis)	NSF CISE CNS	\$150,000	2016-2020
Hybrid nanoparticles for capture and detection of circulating tumor cells	Co-I	PI: Huang (Chemistry, U Memphis)	NIH R15	\$405,435	2015-2018

4. PUBLICATION

Issued Patents

1. **B. I. Morshed**, and S. Consul-Pacareu, "Wireless Analog Passive Sensors", USPTO Patent. U.S. Patent No. US 10,405,746 B2. Issue date: Sept. 10, 2019.
2. **B. I. Morshed**, "Multilayer Additive Printed Circuit", USPTO Patent. U.S. Patent No. US 10,182,499 Issue date: Jan 15, 2019.

Patent Applications

1. **B. I. Morshed** and M. Abu-Saude, "Apparatus and Method to Capture Body Signals with Conjugate Coils and Paired Coils", USPTO App. No. 16/396,701, Filed on May 7, 2019.

2. A. Mohapatra, J. A. Jennings, W. O. Haggard, J. Bumgardner, **B. I. Morshed**, S. R. Misra, T. Fujiwara, G. McGraw, and J. M. Berretta, "Microbead Compositions and Methods for Delivering an Agent", *USPTO Provisional Patent Application*, No. USSN 52/401,751, filed on Sept. 29, 2016.
3. **B. I. Morshed** and R. Mahajan, "Fully Reconfigurable Modular Body-Worn Sensors", USPTO Patent Application US 2016/0128596 A1, 12 May 2016.

Book Chapter

1. **B. I. Morshed**, "Electrical Cell Lysis on Microfluidic Devices", in "Microfluidics and BioMEMS: Devices and Applications", Ed. T. S. Santra, *Jenny Stanford Publishing: Singapore*, published: 31 Aug. 2020.

Refereed Journal Articles

1. J. T. Ramshur, **B. I. Morshed**, A. L. J. Curry, and R. S. Waters, "Telemetry-Controlled Simultaneous Stimulation-and-recording Device (SRD) to Study Interhemispheric Cortical Circuits in Rat Primary Somatosensory (SI) Cortex", *BMC Biomedical Engineering J.*, vol. 1, no. 19, Dec. 2019.
2. S. Khatun, **B. I. Morshed**, and G. M. Bidelman, "A Single-Channel EEG-Based Approach to Detect Mild Cognitive Impairment via Speech-Evoked Brain Responses", *IEEE Trans. Neural Systems and Rehabilitation Engineering (TNSRE)*, vol. 27, no. 5, pp. 1063-1070, May 2019.
3. A. Mohapatra, C. Wells, J. Jennings, M. Ghimire, S. Mishra, and **B. Morshed**, "Electric Stimulus-Responsive Chitosan/MNP Composite Microbeads for a Smart Drug Delivery System", *IEEE Trans Biomedical Engineering (TBME)*, vol. 67, no. 1, pp. 226-233, Jan. 2020.
4. J. Hadley, J. Hirschman, **B. I. Morshed**, and F. Sabri, "RF Coupling of Interdigitated Electrode Array on Aerogels for in vivo Nerve Guidance Applications", *MRS Advances*, vol. 3, no. 21, pp. 1237-1244, 7 Mar. 2019.
5. R. Mahajan, **B. I. Morshed**, and G. M. Bidelman, "BRAINSens: Body-worn Reconfigurable Architecture of Integrated Network Sensors", *Journal of Medical Systems*, vol. 42, no. 185, pp. 1-14, Oct. 2018.
6. A. Mohapatra, M. A. Harris, D. LeVine, M. Ghimire, J. A. Jennings, **B. I. Morshed**, W. O. Haggard, J. D. Bumgardner, S. R. Mishra, and T. Fujiwara, "Magnetic Stimulus Responsive Vancomycin DDS Based on Chitosan Microbeads Embedded with Magnetic Nanoparticles", *J Biomedical Materials Research B: Applied Biomaterials*, vol. 106B, no. 6, pp. 2169-2176, Aug. 2018.
7. M. Abu-Saude and **B. I. Morshed**, "Characterization of a Novel Polypyrrole (PPy) Conductive Polymer Coated Patterned Vertical CNT (pvCNT) Dry ECG Electrode", *MDPI Chemosensors J.*, vol. 6, no. 3, article 27, 12 pages, 13 June 2018.
8. S. Consul-Pacareu, and **B. I. Morshed**, "Design and analysis of a novel wireless resistive analog passive sensor technique", *IET Wireless Sensor Systems*, vol. 8, no. 2, pp. 45-51, 2018.
9. **B. I. Morshed**, B. Harmon, M. S. Zaman, M. J. Rahman, S. Afroz, and M. Rahman, "Inkjet Printed Fully-passive Body-worn Wireless Sensors for Smart and Connected Community (SCC)", *J. Low Power Electron. Appl.*, vol. 7, no. 4, article 26, pp. 1-21, Nov. 2017. doi:10.3390/jlpea7040026.
10. A. C. Graesser, X. Hu, B. D. Nye, K. VanLehn, R. Kumar, C. Heffernan, N. Heffernan B. Woolf, A. M. Olney, V. Rus, F. Andrasik, P. Pavlik, Z. Cai, J. Wetzell, B. Morgan, A. J. Hampton, A. M. Lippert, L.

- Wang, Q. Chen, J. E. Vinson IV, C. N. Kelly, C. McGlown, C. A. Majmudar, **B. Morshed**, and W. Baer, "ElectronixTutor: an intelligent tutoring system with multiple learning resources for electronics", *International Journal of STEM Education*, vol. 5, number 1, pages 15, Jan 2017.
11. M. Harris, H. Ahmed, B. Barr, D. LeVine, L. Pace, A. Mohapatra, **B. Morshed**, J. D. Bumgardner, and J. A. Jennings, "Magnetic Stimuli-Responsive Chitosan-based Drug Delivery Biocomposite for Multiple Triggered Release," *International Journal of Biological Macromolecules*, vol. 104, Part B, pp. 1407-1414, Nov. 2017. doi: 10.1016/j.ijbiomac.2017.03.141
 12. S. Consul-Pacareu, R. Mahajan, M. J. AbuSaude, and **B. I. Morshed**, "NeuroMonitor: A Low-power, Wireless, Wearable EEG Device with DRL-less AFE", *IET Circuits, Devices & Systems Journal*, vol. 11, no. 5, pp. 471-477, Sept. 2017.
 13. B. Noroozi and **B. I. Morshed**, "PSC Optimization of 13.56-MHz Resistive Wireless Analog Passive Sensors", *IEEE Trans. Microwave Theory and Techniques*, vol. 65, no. 9, pp. 3548-3555, Sept. 2017.
 14. C. A. Majmudar and **B. I. Morshed**, "Autonomous OA Removal in Real-Time from Single Channel EEG Data on a Wearable Device Using a Hybrid Algebraic-Wavelet Algorithm", *ACM Transactions on Embedded Computing Systems*, vol. 16, no. 1, pp. 20:1-20:16, Oct. 2016.
 15. R. Mahajan and **B. I. Morshed**, "Performance Analysis of a DRL-less AFE for Battery-Powered Wearable EEG Measurement", *Measurement Journal Elsevier*, vol. 90, pp. 583-591, 2016.
 16. S. Khatun, R. Mahajan, and **B. I. Morshed**, "Comparative Study of Wavelet Based Unsupervised Ocular Artifact Removal Techniques for Single Channel EEG Data", *IEEE Journal of Translational Engineering in Health and Medicine (JTEHM)*, vol. 4, no. 1, pp. 1-8, Dec. 2016.
 17. A. Mohapatra, **B. I. Morshed**, W. O. Haggard, and R. A. Smith, "Stealth Engineering for in vivo Drug Delivery Systems", *Critical Reviews in Biomedical Engineering*, vol. 43, no. 5-6, pp. 347-369, 2015.
 18. M. J. Abu-Saude and **B. I. Morshed**, "Patterned Vertical Carbon Nanotube (pvCNT) Dry Electrodes for Impedimetric Sensing and Stimulation", *IEEE Sensors J.*, vol. 15, no. 10, pp. 5851-5858, 2015.
 19. P. Boyer, **B. I. Morshed**, and T. Mussivand, "Medical Device Market in China", *Artificial Organs J.*, vol. 39, no. 6, pages 520-525, June 2015. DOI: 10.1111/aor.12427.
 20. R. Mahajan and **B. I. Morshed**, "Unsupervised Eye Blink Artifact Denoising of EEG Data with Modified Multiscale Sample Entropy, Kurtosis, and Wavelet-ICA", *IEEE J. Biomedical and Health Informatics*, vol. 19, no. 1, pp. 158-165, 2015.
 21. **B. I. Morshed** and A. Khan, "A Brief Review of Technologies and Challenges to Monitor Brain Activities", *J. Bioengineering & Biomedical Sciences*, vol. 4, no. 1, pp. 1-10, 2014.
 22. M. J. I. A. Saude, and **B. I. Morshed**, "Electrostatics of Single-Stranded DNA: A Prospective for Single Molecule Sequencing", *Biophysical Reviews and Letters*, vol. 9, no. 1, pp. 105-114, 2014. DOI: 10.1142/S1793048013500100.
 23. **B. I. Morshed**, M. Shams, and T. Mussivand, "Investigation of Low-voltage Pulse Parameters on Electroporation and Electrical Lysis Using a Microfluidic Device with Interdigitated Electrodes", *IEEE Trans Biomedical Engineering*, vol. 61, no. 3, pp. 871-882, 2014. DOI: 10.1109/TBME.2013.2291794.

24. S. Li, Q. Yuan, **B. I. Morshed**, C. Ke, J. Wu, and H. Jiang, "Dielectrophoretic Responses of DNA and Fluorophore in Physiological Solution by Impedimetric Characterization", *J. Biosensors and Bioelectronics (Elsevier)*, vol. 41, pp. 649–655, 2013.
25. **B. I. Morshed**, M. Shams, and T. Mussivand, "Electrical Lysis: Dynamics Revisited and Advances in On-chip Operation", *Critical Reviews in Biomedical Engineering*, vol. 41, no. 1, pp. 37-50, 2013.
26. C. S. Ivanoff, **B. I. Morshed**, T. L. Hottel, and F. Garcia-Godoy, "Fluoride Uptake By Human Tooth Enamel: Topical Application Versus Combined Dielectrophoresis and AC Electroosmosis", *American Journal of Dentistry*, vol. 26, no. 4, June 2013.
27. **B. I. Morshed**, M. Shams, and T. Mussivand, "Analysis of Electric Fields Inside Microchannels and Single Cell Electrical Lysis with a Microfluidic Device", *Micromachines, Special issue: Micro/Nanofluidic Device for Single Cells Analysis*, vol. 4, no. 2, pp. 243-256, 2013.
28. **B. I. Morshed**, M. Shams, and T. Mussivand, "Deriving an Electric Circuit Equivalent Model of Cell Membrane Pores in Electroporation", *Biophysical Reviews and Letters*, vol. 7, no. 4, pp. 1 – 12, 2012.
29. **B. I. Morshed**, M. Shams, and T. Mussivand, "A Simple and Effective Fluidic Encapsulation Protocol for BioMEMS Devices", *IEICE Electronics Express*, vol. 8, no. 19, pp. 1549-1555, Oct. 2011.
30. **B. I. Morshed**, M. Shams, and T. Mussivand, "Identifying Severity of Electroporation Through Quantitative Image Analysis," *Applied Physics Letters*, vol. 98, no. 14, pp. 143704 – (1-3), April 2011.
31. **B. I. Morshed** and B. Shahrrava, "A Low Complex Decoding Method for Space-Time Block Codes with Partial CSI", *GESTS Intl. Trans. on Computer Science and Engineering*, vol. 27, no. 1, pp. 53-64, Jan. 2006.

Other Articles

1. D. Arellano and **B. I. Morshed**, "Wireless Analog Passive Sensors for Small Bioelectric Signal Measurement Through Load Modulation", *QuaesitUM UG Research J.*, Spring 2015 Issue, pp. 31-41, 2015.
2. **B. I. Morshed** and A. Massa, "Cutting-Edge Technology for a Cognitive Load Performance Assessment System," *MEDS Magazine (Cover article)*, pp. 16-18, Nov. 2013.
3. **B. I. Morshed**, "Relationship Between Fleming's Rules", *BUET Tech Journal 97-98*, pp. 18-22, 1998.

Invited Conference Papers

1. P. Krishnan, V. Rajagopalan, and **B. I. Morshed**, "A Novel Severity Index of Heart Disease from Beat-wise Analysis of ECG Using Fuzzy Logic for Smart-Health", *IEEE International Conf on Consumer Electronics (ICCE)*, Las Vegas, NV, 4-6 Jan. 2020.
2. **B. I. Morshed**, "Inkjet Printed Thin Film Technology for Wireless Biosensors", Invited Paper, Session D4, *Intl. Conf. on Metallurgical Coating and Thin Films*, San Diego, CA, April 25-29, 2016.
3. **B. I. Morshed**, "Dual Coil for Remote Probing of Signals using Resistive Wireless Analog Passive Sensors (rWAPS)", Invited Paper, Commission B (Special session: Wearable Antennas and Electronics), *National Radio Science Meeting*, Boulder, CO, Jan. 6-9, 2016.

Refereed Conference Proceedings

1. M. M. R. Momota, and **B. I. Morshed**, "Inkjet Printed Flexible Electronic Dry ECG Electrodes on Polyimide Substrates Using Silver Ink", *IEEE Electro Information Tech (EIT) Conf*, Oakland, MI, Jul. 31 – Aug. 1, 2020.
2. M. J. Rahman, **B. Morshed**, and B. Harmon, "A Field Study to Capture Events of Interest from Living Labs Using Everyday Wearables for Spatiotemporal Monitoring Towards Smart Health", *IEEE Engineering in Medicine and Biology Conf. (EMBC)*, Montreal, QC, July 2020.
3. M. S. Zaman, and **B. Morshed**, "Estimating Reliability of Signal Quality of Physiological Data from Data Statistics Itself for Real-time Wearables", *IEEE Engineering in Medicine and Biology Conf. (EMBC)*, Montreal, QC, July 2020.
4. H. Gollakota and **B. I. Morshed**, "A Novel Severity Ranking Approach for Continuous Monitoring of Heart Disease Progression Using Beat-wise Classification of ECG", *IEEE Electro-Information Technology (EIT) Conf.*, Brookings, SD, (*in press*), May 20-22, 2019.
5. M. J. Rahman and **B. I. Morshed**, "SCC Health: A Framework for Online Estimation of Disease Severity for the Smart and Connected Community", *IEEE Electro-Information Technology (EIT) Conf.*, Brookings, SD, (*in press*), May 20-22, 2019.
6. B. Noroozi and **B. I. Morshed**, "The effect of Resonator Configurations on the optimized sensitivity in the Wireless Resistive Analog Passive (WRAP) sensors", *IEEE Electro-Information Technology (EIT) Conf.*, Brookings, SD, (*in press*), May 20-22, 2019.
7. A. Mohapatra, M. A. Harris, D. A. LeVine, M. Grimire, **B. I. Morshed**, J. A. Jennings, J. Bumgardner, W. O. Haggard, S. R. Mishra, and T. Fujiwara, "Magnetic Stimulus Responsive DDS Based on Chitosan Microbeads Embedded with Magnetic Nanoparticles", *IEEE Engineering in Medicine and Biology Conf. (EMBC)*, (*in press*), Berlin, Germany, July 23-27, 2019.
8. M. J. Rahman, R. Mahajan, and **B. I. Morshed**, "Exacerbation in Obstructive Sleep Apnea: Early Detection and Monitoring Using a Single Channel EEG with Quadratic Discriminant Analysis", *IEEE EMBS Conference on Neural Engineering (NER)*, San Francisco, CA, 20-23 Ma. 2019.
9. **B. I. Morshed**, "Ultra Low-power Inductively Coupled Wearable ECG Sensor Design with Inkjet Printed Dry Electrodes", Special session: Wearable, Implants, and Body-Area Networks (BK), *National Radio Science Meeting*, Boulder, CO, Jan. 9-12, 2019.
10. M. J. Rahman and **B. I. Morshed**, "Improving Accuracy of Inkjet Printed Core Body WRAP Temperature Sensor Using Random Forest Regression Implemented with an Android App", Special session: Wearable, Implants, and Body-Area Networks (BK), *National Radio Science Meeting*, Boulder, CO, Jan. 9-12, 2019.
11. S. Afroz and **B. I. Morshed**, "Web Visualization of Temporal and Spatial Health Data from Smartphone App in Smart and Connected Community (SCC)", *IEEE International Smart Cities Conference (ISC2)*, Kansas City, MO, (*in press*), Sept. 16-19, 2018.
12. A. Mohapatra, S. K. Tuli, K. Liu, T. Fujiwara, R. W. Hewitt Jr., F. Andrasik, and **B. I. Morshed**, "Inkjet Printed Parallel Plate Capacitors Using PVP Polymer Dielectric Ink on Flexible Polyimide Substrates", *IEEE Engineering in Medicine and Biology Conference (EMBC)*, Honolulu, HI, (*in press*), July 17-21, 2018.

13. B. Noroozi and **B. I. Morshed**, "Sensitivity Optimization of Printed Spiral Coil for Wireless Resistive Analog Passive (WRAP) Sensors using Genetic Algorithm", *IEEE Engineering in Medicine and Biology Conference (EMBC)*, Honolulu, HI, (in press), July 17-21, 2018.
14. T. Siddiqui and **B. I. Morshed**, "Severity Classification of Chronic Obstructive Pulmonary Disease and Asthma with Heart Rate and SpO₂ Sensors", *IEEE Engineering in Medicine and Biology Conference (EMBC)*, Honolulu, HI, (in press), July 17-21, 2018.
15. M. Abu-Saude and **B. I. Morshed**, "Accessing Differential Measures with a Conjugate Coil-pair for Wireless Resistive Analog Passive (WRAP) ECG Sensors", *IEEE Electro-Information Technology (EIT) Conf.*, Oakland, MI, (in press), May 3-5, 2018.
16. S. Khatun, **B. I. Morshed**, and G. M. Bidelman, "Single Channel EEG Based Score Generation to Monitor the Severity and Progression of Mild Cognitive Impairment", *IEEE Electro-Information Technology (EIT) Conf.*, Oakland, MI, (in press), May 3-5, 2018.
17. S. Khatun and **B. I. Morshed**, "Fully-Automated Human Activity Recognition with Transition Awareness from Wearable Sensor Data for mHealth", *IEEE Electro-Information Technology (EIT) Conf.*, Oakland, MI, (in press), May 3-5, 2018.
18. T. Siddiqui and **B. I. Morshed**, "Severity Exploratory Model Analysis of Chronic Obstructive Pulmonary Disease and Asthma with Heart Rate and SpO₂", *IEEE Electro-Information Technology (EIT) Conf.*, Oakland, MI, (in press), May 3-5, 2018.
19. M. S. Zaman and **B. I. Morshed**, "Design and Verification of a Portable Scanner for Body-worn Wireless Resistive Analog Passive (WRAP) Sensors", *IEEE Electro-Information Technology (EIT) Conf.*, Oakland, MI, (in press), May 3-5, 2018.
20. Graesser, A. C., Hampton, A. J., Morgan, B. Wang, L., Majmudar, C. A., **Morshed, B. I.**, Hu, X., Nye, B. D., Cai, Z., Tackett, A. C., & Olney, A. "ElectronixTutor: An adaptive learning platform with multiple resources" *In Proceedings of the interservice/industry training, simulation, & education conference (I/ITSEC '18)*, Orlando, FL, (in press), Nov. 26–30, 2018.
21. M. J. Rahman, R. Mahajan, and **B. I. Morshed**, "Severity Classification of Obstructive Sleep Apnea Using Only Heart Rate Variability Measures with an Ensemble Classifier", *IEEE conf Biomedical and Health Informatics (BHI)*, Las Vegas, NV, pp. 33-36, 2018.
22. A. Mohapatra, **B. I. Morshed**, S. Shamsir, and S. K. Islam, "Inkjet Printed Thin Film Electronic Traces on Paper for Low-cost Body-worn Electronic Patch Sensors", *IEEE conf Body Sensor Networks (BSN)*, Las Vegas, NV, pp. 169-172, 2018.
23. **B. I. Morshed**, "Wireless Resistive Analog Passive Temperature Sensors for Smart & Connected Community", Commission B (Special session: Wearable Antennas and Electronics), *National Radio Science Meeting*, Boulder, CO, Jan. 4-6, 2018.
24. B. Noroozi and **B. I. Morshed**, "Coil Distance and Angle Misalignment Effects on the Mutual Inductance for 13.56 MHz WRAP Sensors", Commission B (Special session: Wearable Antennas and Electronics), *National Radio Science Meeting*, Boulder, CO, Jan. 4-6, 2018.
25. R. Mahajan, B. Noroozi, and **B. I. Morshed**, "Reconfigurable Architecture of Neuro-physiological Sensors for Mobile Health System", *The Second IEEE/ACM Conf on Connected Health: Applications, Systems, and Engineering Technologies (CHASE)*, Philadelphia, PA, pp. 402-409, July 17-19, 2017. DOI: 10.1109/CHASE.2017.124.

26. A. Mohapatra, M. A. Harris, M. Ghimire, **B. I. Morshed**, J. A. Jennings, W. O. Haggard, J. D. Bumgardner, S. R. Mishra, and T. Fujiwara, "Chitosan Microbeads with MNP on Printed Electrodes for Electric Stimulus Responsive Drug Delivery," *IEEE Intl. Symp. Medical Measurements and Applications (MeMeA)*, Rochester, MN, pp. 464-469, May 7-10, 2017.
27. S. Khatun and **B. I. Morshed**, "Detection of Myocardial Infarction and Arrhythmia from Single-Lead ECG Data using Bagging Trees Classifier," *IEEE Electro-Information Technology (EIT)*, pp. 520-524, 2017.
28. S. Khatun, **B. I. Morshed**, and G. M. Bidelman, "Single Channel EEG Time-Frequency Features to Detect Mild Cognitive Impairment," *IEEE Intl. Symp. Medical Measurements and Applications (MeMeA)*, Rochester, MN, pp. 437-442, May 7-10, 2017.
29. **B. I. Morshed**, "Impedance Phlebography Based Pulse Sensing Using Inductively-Coupled Inkjet-Printed WRAP Sensor", Commission B (Special session: Wearable Antennas and Electronics), *National Radio Science Meeting*, Boulder, CO, Jan. 4-6, 2017.
30. B. Noroozi and **B. I. Morshed**, "Simulation of Coil Separation and Angle Effects on the Mutual Inductance for 13.56 MHz WRAP Sensors", Commission B (Special session: Wearable Antennas and Electronics), *National Radio Science Meeting*, Boulder, CO, Jan. 4-6, 2017.
31. A. L. Curry, V. Pellicer-Morata, **B. Morshed**, S. Narayana, and R. S. Waters, "Interhemispheric Pathway Modulation Between Homotopic Sites in Rat Primary Motor Cortex (MI) Leads to Expression of New Motor Output in Ipsilateral Forelimb", Society for Neuroscience meeting, San Diego, CA, Nov. 12-16, 2016.
32. R. Mahajan, **B. I. Morshed**, and G. M. Bidelman, "Design and validation of a wearable "DRL-less" EEG using a novel fully-reconfigurable architecture", *IEEE Engineering Medicine and Biology Society Conf.*, Orlando, FL, Aug. 16-20, pp. 4999-5002, 2016.
33. B. Noroozi and **B. I. Morshed**, "Formal Method for PSC Design Optimization of 13.56 MHz Resistive Wireless Analog Passive Sensors (rWAPS)", *IEEE Topical Conf. Biomedical Wireless Technologies, Networks, and Sensing Systems (BioWireless)*, Jan. 24-27, 2016. (DOI: 10.1109/BIOWIRELESS.2016.7445547)
34. M. Abu-Saude and **B. I. Morshed**, "Polypyrrole (PPy) Conductive Polymer Coating of Dry Patterned Vertical CNT (pvCNT) Electrode to Improve Mechanical Stability", *IEEE Topical Conf. Biomedical Wireless Technologies, Networks, and Sensing Systems (BioWireless)*, Jan. 24-27, 2016. (DOI: 10.1109/BIOWIRELESS.2016.7445569)
35. S. Khatun, R. Mahajan, and **B. I. Morshed**, "Comparative Analysis of Wavelet Based Approaches for Reliable Removal of Ocular Artifacts from Single Channel EEG," *IEEE Electro/Information Technology (EIT)*, Dekalb, IL, pp. 335-340, 21-23 May 2015. (doi: 978-1-4799-8802-0)
36. C. Majmudar, R. Mahajan, and **B. I. Morshed**, "Real-Time Hybrid Ocular Artifact Detection and Removal for Single Channel EEG", *IEEE Electro/Information Technology (EIT)*, Dekalb, IL, pp. 330-334, 21-23 May 2015.
37. M. Abu-Saude, S. Consul-Pacareu, and **B. I. Morshed**, "Feasibility of Patterned Vertical CNT for Dry Electrode Sensing of Physiological Parameters", *IEEE Biowireless Conf*, pp. 1-4, 2015. (doi: 10.1109/BIOWIRELESS.2015.7152124)

38. S. Consul-Pacareu, D. Arellano, and **B. I. Morshed**, "Body-worn Fully-Passive Wireless Analog Sensors for Biopotential Measurement Through Load Modulation", *IEEE Biowireless Conf*, pp. 1-3, 2015. (doi: 10.1109/BIWIRELESS.2015.7152116)
39. S. Consul-Pacareu, D. Arellano, and **B. I. Morshed**, "Body-worn Fully-Passive Wireless Analog Sensors for Physiological Signal Capture Through Load Modulation using Resistive Transducers," *IEEE Healthcare Innovations and Point-of-Care Technologies Conf.*, Seattle, WA, pp. 67-70, Oct. 2014.
40. R. Mahajan, C. A. Majmudar, S. Khatun, **B. I. Morshed**, and G. M. Bidelman, "NeuroMonitor Ambulatory EEG Device: Comparative Analysis and Its Application for Cognitive Load Assessment", *IEEE Healthcare Innovations and Point-of-Care Technologies Conf.*, Seattle, WA, pp. 133-136, Oct. 2014.
41. A. Mohapatra, G. McGraw, **B. I. Morshed**, J. A. Jennings, W. O. Haggard, J. D. Bumgardner, and S. R. Mishra, "Electric Stimulus Response of Chitosan Microbeads Embedded with Magnetic Nanoparticles for Controlled Drug Delivery", *IEEE Healthcare Innovations and Point-of-Care Technologies Conf.*, Seattle, WA, pp. 284-287, Oct. 2014.
42. M. N. Sahadat, E. L. Jacobs, and **B. I. Morshed**, "Hardware-Efficient Robust Biometric Identification from Amplitude and Interval Features of 0.58 Second Limb (Lead I) ECG Signal Using Logistic Regression Classifier", *IEEE Eng Med Biol Soc Conf. (EMBC), Chicago, IL*, pp. 1440-1443, Aug. 2014.
43. M. N. Sahadat, A. P. Hoban, **B. I. Morshed**, and W. O. Haggard, "Investigation of Electrical Stimulus on Chitosan Film Based DDS", *IEEE Eng Med Biol Soc Conf (EMBC), Chicago, IL*, pp. 1424-1427, 2014.
44. A. Mohapatra, M. N. Sahadat, G. McGraw, A. P. Hoban, **B. I. Morshed**, W. O. Haggard, J. D. Bumgardner, J. A. Jennings, and S. R. Misra, "Stimuli-Controlled Drug Delivery System Development with Implantable Biocompatible Chitosan Microbeads", *4th IAJC/ISAM Joint International Conference*, Sept. 25-27, FL, Paper 77, 11 pages, 2014. (ISBN 978-1-60643-379-9)
45. S. Consul-Pacareu, R. Mahajan, M. N. Sahadat, and **B. I. Morshed**, "Wearable Ambulatory 2-Channel EEG NeuroMonitor Platform for Real-life Engagement Monitoring Based on Brain Activities at the Prefrontal Cortex," *4th IAJC/ISAM Joint Intl. Conf.*, Paper 78, 12 pages, 2014.
46. R. Mahajan and **B. I. Morshed**, "Sample Entropy Enhanced Wavelet-ICA Denoising Technique for Eye Blink Artifact Removal from Scalp EEG Dataset", *6th Intl. IEEE/EMBS Conf. Neural Engineering*, pp. 1394-1397, Nov. 2013.
47. S. Consul-Pacareu and **B. I. Morshed**, "Power optimization of NeuroMonitor EEG device: Hardware/Software co-designed Interrupt Driven clocking", *6th Intl. IEEE/EMBS Conf. Neural Engineering*, pp. 25-28, Nov. 2013.
48. T. M. DeCosta-Fortune, **B. I. Morshed**, S. Consul-Pacareu, J. T. Ramshur, C. Li, A. L. de Jongh Curry, and R. S. Waters, "Telemetry Controlled Simultaneous Microstimulation and Recording Device for Studying Cortical Plasticity", *Intl. IEEE/EMBS Conf. Neural Engineering*, pp. 61-64, Nov. 2013.
49. M. N. Sahadat, S. Consul-Pacareu, and **B. I. Morshed**, "Wireless Ambulatory ECG Signal Capture for Cognitive Load Study Using the NeuroMonitor Platform", *6th Intl. IEEE/EMBS Conf. Neural Engineering*, pp. 497-500, Nov. 2013.

50. S. Consul-Pacareu, **B. I. Morshed**, and R. Kozma, "Hardware efficient seizure prediction algorithm", *SPIE Proc on Nanosensors, Biosensors, and Info-Tech Sensors and Systems*, vol. 8691, pp. 86911J (1 – 10), Mar. 2013.
51. R. Mahajan, S. Consul-Pacareu, M.J. AbuSaude, M.N. Sahadat, and **B. I. Morshed**, "Ambulatory EEG Neuromonitor Platform for Engagement Studies of Children with Development Delays", *SPIE Proc. Smart Biomedical & Physiological Sensor Tech X*, vol. 8719, pp. 87190L(1-10), May 2013.
52. **B. I. Morshed**, M. Shams, and T. Mussivand, "Effectiveness of multiple pulses on flow index of electroporation", *Proc. of SPIE*, Vol. 8344, pp. 834417 (1-8), CA, USA, Mar. 2012.
53. S. Al-Soyeb, **B. I. Morshed**, and F. Sabri, "Numerical Study of Electrical Stimulation for Neuronal Cell Growth on Silica Aerogel Substrate", *IEEE Biomedical Science and Engineering Conference (BSEC)*, pp. 1-4, May 2013.
54. J. Hossen and **B. I. Morshed**, "Design and Performance Evaluation of a Redundant Binary Full Adder for Uniform Timing Delay", *IEEE Intl. Conf. Electrical and Computer Engineering*, pp. 733-736, Dec. 2012.
55. S. Consul-Pacareu and **B. I. Morshed**, "Neuronal recorder implementation using envelope detector for low power and low area", *IEEE Northeast Bioengineering Conference*, pp. 371-372, USA, Mar. 2012.
56. **B. I. Morshed** and S. Consul-Pacareu, "Low-power Fuzzy logic VLSI implementation with asynchronous topology for neuronal sensors", *IEEE Northeast Bioengineering Conference*, pp. 241-242, USA, Mar. 2012.
57. **B. I. Morshed**, M. Shams, and T. Mussivand, "An Analysis of Electric Fields Developed Inside Microchannels of Microfluidic Devices", *IEEE Intl. Conf. Electrical and Computer Engineering*, pp. 261-265, Dec. 2008.
58. **B. I. Morshed** and B. Shahrrava, "A New Metric for Space-Time Block Codes with Imperfect Channel Estimates", *IEEE Intl. Conf. Wireless and Mobile Computing, Networking and Communications*, Vol. 1, pp. 174-181, Canada, Aug. 2005.
59. **B. I. Morshed** and B. Shahrrava, "A Novel Approach for Iterative Channel Estimation Using Data Symbols of Space-Time Block Codes", *IEEE Canadian Conf. Electrical and Computer Engineering*, pp. 1767-1772, Canada, May 2005.
60. **B. I. Morshed** and B. Shahrrava, "Frame-Based Iterative Channel Estimation Using Data Symbols of Space-Time Block Codes", *IEEE Electro/Information Technology (EIT)*, pp. 26-32, USA, 2004.
61. **B. I. Morshed**, K. M. Rahman, S. M. Khan, M. A. Hasan, and M. A. Rahman, "Excitation Control of Synchronous Generators using Fuzzy Technique", *Universities Power Engineering Conf*, UK, 2001.
62. **B. I. Morshed**, K. M. Rahman, S. M. Khan, and M. A. Hasan, "A PC Based Fuzzy Controller for DC Voltage Stabilization", *Intl Conf Comp Info Tech*, pp. 44-48, Jan. 2001.

Refereed Conference Presentations and Posters

1. S. Khatun, **B. Morshed**, G. M. Bidelman, "Regression based Automated Scoring Technique of Mild Cognitive Impairment (MCI) Severity using Single Channel EEG Measures with Auditory Stimulus", *IEEE Engineering in Medicine and Biology Conference (EMBC)*, Honolulu, HI, July 17-21, 2018.

2. **B. I. Morshed**, "Flexible and Disposable rWAPS Printed Sensors on Paper Substrate", *NIH-IEEE Conf Healthcare Innovations and Point-of-care Technologies (HIPOCT)*, Bethesda, MD, Nov. 9-10, 2015.
3. R. Mahajan and **B. I. Morshed**, "Reconfigurable architecture for wearable sensor network", *NIH-IEEE Conf Healthcare Innovations and Point-of-care Technologies (HIPOCT)*, Bethesda, MD, Nov. 9-10, 2015.
4. C. Mcglown and **B. I. Morshed**, "Virtual Reality Simulation for Concussion Investigation Through Interactive Testing", *IEEE SoutheastCon*, Ft. Lauderdale, FL, 2015.
5. **B. I. Morshed** and R. Mahajan, "Body-worn Reconfigurable Architecture of Integrated Network Sensors (BRAINsens) to Monitor Neuro-physiological Activities at Naturalistic Environment", *IEEE EMBS BRAIN Grand Challenges Conf.*, Washington, DC, 13-14 Nov. 2014.
6. A. Hoban, G. McGraw, A. Mohapatra, **B. Morshed**, J. A. Jennings, J. Bumgardner, S. Mishra, and W. Haggard, "Preliminary Results for the Addition of Fe₃O₄ Nanoparticle Impregnated Chitosan Microspheres to the Chitosan Sponge for Stimuli Responsive Antibiotic Delivery", *Society for Biomaterials Annual Meeting*, Denver, CO, Apr. 16-19, 2014.
7. **B. I. Morshed** and M. J. I. A. Saude, "Molecular Dynamic Simulation of Intrinsic Electrostatics of Single-Stranded DNA", *NHGRI Advanced Sequencing Technology Development Meeting*, San Diego, CA, May 2013.
8. T. DeCosta-Fortune, **B. Morshed**, C.-X. Li, J.T. Ramshur, S. Vemulapalli, A. Curry, and R.S. Waters, "Interactive Neuronal Embedded System For The Controlled Delivery Of Telemetry-Based Stimulation And Real-Time Response Recordings", *Society for Neuroscience Annual Meeting*, New Orleans, LA, Oct. 2012.
9. **B. I. Morshed** and M. Shams, "Optimizing electroporation for intracellular drug delivery", *NanoSmat-USA*, Tampa, FL, USA, Mar. 2012.
10. S. Li, **B. I. Morshed**, J. Wu, and C. Ke, "Dielectrophoretic response of DNA in physiological solution using impedimetric measurements", *World Congress on Biosensors*, p. 1.74, MX, 2012.
11. **B. I. Morshed**, M. Shams, and T. Mussivand, "An electric circuit equivalent model to describe membrane pores in electroporation", *World Congress on Biosensors*, p. 1.4, MX, 2012.
12. **B. I. Morshed**, M. Shams, and T. Mussivand, "A microfluidic device to lyse cell membrane using electric field", *Canadian Workshop on MEMS and Microfluidics*, Montreal, Canada, Aug. 2007.
13. **B. I. Morshed**, M. Shams, and T. Mussivand, "Development of a rapid cell membrane lysing device using electrical pulses", *16th World Congress of the World Society of Cardio-Thoracic Surgeons*, p. 172, Ottawa, Canada, Aug. 2006.

Non-refereed Workshops, Competitions, and Symposiums

1. **B. I. Morshed**, T. Fujiwara, F. Andrasik, R. Hewitt, R. Kabra, and M. Rahman, "CPS: Small: Inkjet Printed Flexible Electronic CPS with Context-aware Events of Interest Detection", *10th Annual Cyber-Physical Systems Principal Investigators' Meeting*, Alexandria, VA, Nov. 21 - 22, 2019.
2. **B. I. Morshed**, B. Harmon, and M. Rahman, "A Framework of Events of Interest (Eoi) Capture Using Novel Body-worn Fully-passive Wireless Sensors for S&CC", *10th Annual Cyber-Physical Systems Principal Investigators' Meeting*, Alexandria, VA, Nov. 21 - 22, 2019.

3. B. Noroozi and **B. I. Morshed**, "Design and Optimization of Printed Spiral Coils with Genetic Algorithm for Wireless Passive Sensors", *Institute of Intelligent System student poster presentation*, Nov. 2019.
4. M. J. Rahman and **B. I. Morshed**, "Investigating a Minimalistic Approach for Severity Estimation and Progression Monitoring of Obstructive Sleep Apnea at Home Using Wearables", *Institute of Intelligent System student poster presentation*, Nov. 2019.
5. M. S. B. Zaman and **B. I. Morshed**, "Detection of the Presence of Bio-signal in Wireless Resistive Analog Passive (WRAP) Sensors with Generalized Signal Quality Indices", *Institute of Intelligent System student poster presentation*, Nov. 2019.
6. M. M. R. Momota and **B. I. Morshed**, "A Novel Wearable Electrocardiogram (ECG) Device for Early Detection and Monitoring of Cardiac Patients", *Institute of Intelligent System student poster presentation*, Nov. 2019.
7. B. Noroozi and **B. I. Morshed**, "Wireless Resistive Analog Passive (WRAP) Sensor Spiral Antenna Optimization with Genetic Algorithm", *Department of EECE Poster Competition*, 22 April, 2019.
8. M. S. B. Zaman and **B. I. Morshed**, "Portable Scanner for Body-worn Wireless Resistive Analog Passive (WRAP) Sensors", *Department of EECE Poster Competition*, 22 April, 2019.
9. **B. I. Morshed**, B. Harmon, and M. Rahman, "EAGER: Events of Interest (Eol) Capture Using Novel Body-worn Fully-passive Wireless Sensors for S&CC", *9th Annual Cyber-Physical Systems Principal Investigators' Meeting*, Alexandria, VA, Nov. 15 - 16, 2018.
10. S. Khatun, **B. I. Morshed**, and G. Bidelman, "Automated Scoring of Mild Cognitive Impairment (MCI) Severity Using Single Channel EEG Measures with Auditory Stimulus", *Department of EECE Poster Competition*, 24 April, 2018.
11. B. Noroozi and **B. I. Morshed**, "Using Genetic Algorithm to Maximize the Sensitivity of Inductive Wireless Resistive Analog Passive (WRAP) Sensors", *Department of EECE Poster Competition*, 24 April, 2018.
12. M. S. B. Zaman and **B. I. Morshed**, "Design and Verification of a Portable Scanner for Body-worn Wireless Resistive Analog Passive (WRAP) Sensors", *Department of EECE Poster Competition*, 24 April, 2018.
13. T. Siddiqui and **B. I. Morshed**, "Severity Assessment of Chronic Obstructive Pulmonary Disease and Asthma with Heart Rate and SpO2 Sensors", *Department of EECE Poster Competition*, 24 April, 2018.
14. S. Afroz and **B. I. Morshed**, "An Interactive Web-based Visualization Tool of Community Health Data for a Smart & Connected Community (SCC)", *Department of EECE Poster Competition*, 24 April, 2018.
15. **B. Morshed**, B. Harmon, and M. Rahman, "EAGER: Events of Interest (Eol) Capture Using Novel Body-worn Fully-passive Wireless Sensors for S&CC", *8th Annual Cyber-Physical Systems Principal Investigators' Meeting*, Alexandria, VA, Nov. 13 - 14, 2017.
16. **B. Morshed**, B. Harmon, M. Rahman, Md. S. Zaman, Md. J. Rahman, S. Afroz, T. Siddiqui, B. Noroozi, and J. Coleman, "Events-of-interest Capture Using Novel Body-worn Fully-passive Wireless sensors for S&CC", *Smart Cities Connect Conference & Expo. (US ignite)*, Austin, TX, Jun. 25 – 28, 2017.

17. M. S. B. Zaman and **B. I. Morshed**, "Portable Scanner Prototyping for Physiological Signal Acquisition from Wireless Passive Sensors", *Department of EECE Poster Competition*, 24 April, 2017.
18. S. Afroz and **B. I. Morshed**, "An Interactive Web-based Visualization Tool of Community Health Data for a Smart & Connected Community (SCC)", *Department of EECE Poster Competition*, 24 April, 2017.
19. M. J. Rahman and **B. I. Morshed**, "Smart Phone App Framework Development for Severity Ranking of Diseases", *Department of EECE Poster Competition*, 24 April 2017.
20. T. Siddiqui and **B. I. Morshed**, "Autonomous Classification of Chronic Obstructive Pulmonary Disease Severity with Minimal Sensors", *Department of EECE Poster Competition*, 24 April, 2017.
21. B. Noroozi and **B. I. Morshed**, "PSC Optimization of 13.56-MHz Resistive Wireless Analog Passive Sensors", *Department of EECE Poster Competition*, 24 April, 2017.
22. A. Mohapatra, M. A. Harris, M. Ghimire, **B. I. Morshed**, J. A. Jennings, W. O. Haggard, J. D. Bumgardner, S. R. Mishra, and T. Fujiwara, "Chitosan Microbeads with MNP on Printed Electrodes for Electric Stimulus Responsive Antibiotic Delivery", *Department of EECE Poster Competition*, 24 April, 2017.
23. R. Alexander, S. Khatun, and **B. I. Morshed**, "EEG-Based Detection of Student Engagement in Various Classroom Activities for Children with Special Needs", Society of Women Engineers Professional Chapter, Memphis, TN, 2017.
24. A. Robinson and **B. I. Morshed**, "Small devices to improve epileptic health care", Tennessee LSAMP, 2017.
25. J. Coleman and **B. I. Morshed**, "Events of Interest Capture Using Novel Body-worn Fully-passive Wireless Sensors," Tennessee LSAMP, 2017.
26. **B. Morshed**, B. Harmon, and M. Rahman, "EAGER: Events of Interest (EoI) Capture Using Novel Body-worn Fully-passive Wireless Sensors for S&CC", *7th Annual Cyber-Physical Systems Principal Investigators' Meeting*, Arlington, VA, Oct. 31 - Nov. 1, 2016.
27. R. Mahajan and **B. I. Morshed**, "BRAINSens: Body-worn Reconfigurable Architecture of Integrated Network Sensors", *Department of EECE Poster Competition*, 25 April, 2016.
28. B. Noroozi and **B. I. Morshed**, "Planar Printed Spiral Coil Design Optimization for Resistive Wireless Analog Passive Sensors," *Department of EECE Poster Competition*, 25 Apr. 2016.
29. A. Mohapatra, M. Harris, **B. I. Morshed**, J. A. Jennings, W. O. Haggard, J. D. Bumgardner, and S. R. Mishra, "Chitosan-Based Magnetic Stimulus Responsive Vancomycin Drug Delivery System," *Department of EECE Poster Competition*, 25 Apr. 2016.
30. M. S. B. Zaman and **B. I. Morshed**, "Algorithm Development For Automated Insulation Layer Generation From PCB Gerber For Complex Multilayer Additive Printing Circuits," *Department of EECE Poster Competition*, 25 Apr. 2016.
31. B. Noroozi, M. Abu-Saude, and **B. I. Morshed**, "Resistive Wireless Analog Passive Sensors (rWAPS)", *IEEE Radio & Wireless Week (RWW)*, Austin, TX, 24-27 Jan. 2016.
32. M. J. Abu-Saude and **B. I. Morshed**, "Patterned Vertical Carbon Nanotube (pvCNT) Dry Electrodes for Impedimetric Sensing and Stimulation", *Department of EECE Poster Competition*, 24 April, 2015.

33. A. Mohapatra, G. McGraw, **B. I. Morshed**, J. A. Jennings, W. O. Haggard, J. D. Bumgardner, and S. R. Misra, "Magnetic Stimulus Responsive Tetracycline Delivery System Based on Chitosan Microbeads with Embedded Magnetic Nanoparticles", *Department of EECE Poster Competition*, 24 April, 2015.
34. R. Mahajan and **B. I. Morshed**, "BRAINSens: Body-worn Reconfigurable Architecture of Integrated Network Sensors", *Department of EECE Poster Competition*, 24 April, 2015.
35. S. Khatun, R. Mahajan, and **B. I. Morshed**, "Comparative Analysis of Wavelet Based Approach for Reliable Removal of Ocular Artifacts from Single Channel EEG", *Department of EECE Poster Competition*, 24 April, 2015.
36. C. Majmudar and **B. I. Morshed**, "Hardware Implementation of Real-time Hybrid OA Detection and Removal for Single Channel EEG Signals", *Department of EECE Poster Competition*, 24 April, 2015.
37. B. Noroozi and **B. I. Morshed**, "PSC Design Optimization for Resistive Wireless Analog Passive Sensor", *Department of EECE Poster Competition*, 24 April, 2015.
38. S. Consul-Pacareu and **B. I. Morshed**, "Wireless Analog Passive Biosignal Sensors Based on Frequency Selective Backscattering", *Department of EECE Poster Competition*, 25 April, 2014.
39. M. N. Sahadat, E. Jacobs, and **B. I. Morshed**, "Hardware-Efficient Robust Biometric Identification from Amplitude and Interval Features of 0.58 Second Limb (Lead I) ECG Signal Using Logistic Regression Classifier", *Department of EECE Poster Competition*, 25 April, 2014.
40. R. Mahajan, C. A. Majmudar, S. Khatun, and **B. I. Morshed**, "NeuroMonitor Ambulatory EEG Device: Comparative Analysis and Its Application for Cognitive Load Assessment", *Department of EECE Poster Competition*, 25 April, 2014.
41. A. Mohapatra, G. McGraw, L. Wang, **B. I. Morshed**, J. A. Jennings, W. O. Haggard, J. D. Bumgardner, and S. R. Mishra, "Electric Stimulus Responsive Drug Delivery System Based on Chitosan Microbeads with Embedded Magnetic Nanoparticles", *Department of EECE Poster Competition*, 25 April, 2014.
42. R. Mahajan, S. Consul-Pacareu, M. N. Sahadat, and **B. I. Morshed**, "SenseBrain: Sensing brain activities unobtrusively in real-life settings for clinical applications", Memphis Research and Innovation Expo, FedEx Institute of Technology, Memphis TN, Oct. 2013.
43. Zach Tate, Zac Arnold, Josh Smith, Sergi Consul-Pacareu, and **B. I. Morshed**, "Forgery-proof identification using sweat gland distribution", *DRS Student Infrared Imaging Competition*, June 2013.
44. R. Mahajan, S. Consul, M. AbuSaude, M. N. Sahadat, and **B. I. Morshed**, "SenseBrain: A hardware platform for continuous monitoring of prefrontal cortex activities with scalp electroencephalogram", *Department of EECE Poster Competition*, 26 April, 2013.
45. S. Consul, **B. I. Morshed**, and R. Kozma, "Hardware efficient seizure prediction algorithm", *Department of EECE Poster Competition*, 26 April, 2013.
46. **B. I. Morshed**, "Development of a minimalistic embedded wireless EEG system for cyber-physical interfacing towards wearable body sensors", *Cognitive Sensing, Computing & Networking Workshop*, AL, USA, 15 Aug. 2012.

47. L. Sherman, F. Sabri, **B. I. Morshed**, and O. Skalli, "Effect of Electrical Stimulation on Culture Environment of Astrocytoma Cells on Cross-linked Silica Aerogels", *MemphisCRESH Poster Competition*, July 2012.
48. M. A. Saude, D. Carpenter, S. Consul-Pacereu, S. Al-Soyeb, **B. I. Morshed**, and F. Sabri, "Augmented Thermal Imaging to Investigate Emissivity of Polyuria-crosslinked Silica Aerogel for Biosensing Applications", *DRS Student Infrared Imaging Competition*, June 2012.
49. J. Carrasco, X. Benavides, S. Pacareu, and **B. I. Morshed**, "Cyber-physical system approach to embedded personal assistive device for persons with severe visual impairments", *Cognitive Sensing, Computing & Networking Workshop*, AL, USA, 15 Aug. 2012.
50. K. Solvason-Brown, J. P. Hawkins, D. Perez, and **B. I. Morshed**, "SmartPark: A RFID-based smart parking system", *Applied Research Day*, Algonquin College, Canada, 15 Apr. 2011.
51. R. Eady, B. Brinsmead, J. Corvari, and **B. I. Morshed**, "Adjustable Smart Antenna", *Applied Research Day*, Algonquin College, Canada, Apr. 15, 2011.
52. **B. I. Morshed**, K. M. Rahman, S. M. Khan, and M. A. Hasan, "Fuzzy logic based real-time EPROM controller for DC voltage stabilization of a 3-phase synchronous generator connected to a PC through a data accusation card", *TechTransfer, BUET*, Dhaka, Bangladesh, Dec. 23-24, 2000.

5. TEACHING

2020 – now **Faculty**, Computer Science Department, Texas Tech University.

CS 4331/5331 – Special Topics in CS: Embedded Systems (Fall 2020)

2011 – 2020 **Faculty**, Electrical and Computer Engineering Department, University of Memphis.

EECE/BIOM 7901/8901 – Bioelectronics/Biosensors & Bioelectronics (Fall 2015, Fall 2017, Fall 2019)

EECE 3270 – Intro to Microprocessor (Fall 2013, Fall 2014, Fall 2015, Fall 2016, Fall 2017, Spring 2018, Fall 2018, Spring 2019, Fall 2019, Spring 2020)

EECE 4278/6278 – Computer Organization (Spring 2013, Spring 2014, Spring 2015, Spring 2016, Fall 2016, Spring 2017, Fall 2018)

EECE 4712/6712 – Embedded Systems (Fall 2011, Fall 2012, Spring 2014, Spring 2015, Spring 2016, Spring 2017, Spring 2018, Spring 2019, Spring 2020)

EECE 7234/8234 – VLSI Design (Spring 2012, Fall 2013, Fall 2014)

EECE 7255/8255 – Digital Communications (Fall 2012)

6. SERVICE

Editor:

- Guest editor, Special issue: "Signal Processing for Smart Sensors, Wearables, and IoTs", in *Journal of Signal Processing Systems (JSPS)*, Springer Nature, May 2021.

- Co-Guest editor, Special Issue: "Emerging Smart and Intelligent Wearable/Implantable Sensors for IoT and Biomedical Applications", Guest editors: S. K. Islam, B. I. Morshed, I. Mahbub, and K. A. Hoque, *MDPI Sensors Journal (Section: "Intelligent Sensors")*, February 2020.

Editorial Board:

- Review Editor, Editorial Board, "Wearable Electronics", *Frontiers of Electronics*, 2020 - now.

Professional Services:

- Co-organizer of a special session on "Wearable, Implants, and Body Area Network (BK)", URSI National Radio Science Meeting, Boulder, CO, Jan. 9-12, 2019.
- Session chair, Track T5d, Transportation and Mobility, IEEE ISC2 conference, Kansas City, Sept. 18, 2018.
- Session chair, Track T19, Health Informatics - Mobile health (Theme 10), IEEE EMBC, Hawaii, July 20, 2018.
- Technical Program Committee (TPC), 4th IEEE Intl Smart Cities Conference (ISC2), Sept. 16-19, 2018.
- Co-organizer of a special session on "Wearable Antennas and Electronics", URSI National Radio Science Meeting, Boulder, CO, Jan. 4-7, 2018.
- Technical Program Committee (TPC), IEEE Intl workshop on Communication, Computing, and Networking in Cyber Physical Systems (CCNCPS), Kansas City, MO, 20-24 May 2018.
- Co-organizer of a special session on "Wearable Antennas and Electronics", URSI National Radio Science Meeting, Boulder, Colorado, Jan. 4-7, 2017.
- Technical Program Committee (TPC), IEEE International workshop on Communication, Computing, and Networking in Cyber Physical Systems (CCNCPS), Atlanta, GA, 5-8 Jun. 2017.
- Organized Talk for IEEE EMBS Memphis Chapter (Speaker: Cameron Brackett, Vice President, Memphis Bioworks Foundation, Memphis, TN), on 29th Nov., 2016.
- Organized Talk for IEEE EMBS Memphis Chapter (Speaker: Dr. Islam, EECS, UTK), 6th May, 2016.
- IEEE EMBS Chair, IEEE Memphis Section, 2016.
- Technical Program Committee (TPC), IEEE Topical Conf. on Biomedical Wireless Technologies (IEEE BioWireleSS), Austin, TX, 24-27 Jan. 2016.
- Technical Designated Reviewer, International Symposium on Health and Medical Sciences (ISHAMS), 1-3 Dec. 2015.
- Technical Program Committee (TPC), IEEE Topical Conf. on Biomedical Wireless Technologies (IEEE BioWireleSS), San Diego, CA, 25-28 Jan. 2015.
- Session Co-chair, BioWireleSS Session: TU3D, IEEE BioWireleSS Conf., 1:30pm – 2:50pm, Jan 27, 2015.
- Scientific Co-chair, 4th IAJC/ISAM Joint Intl Conf., Orlando, FL, Sept 25-27, 2014.
- Session Chair, EDU 303: Topics in Education I, IAJC/ISAM Joint Intl Conf., Sept. 26, 2014.
- Advisor, IEEE Student Branch, The University of Memphis, 2013 – now.

Grant Proposal Reviewer:

- Served as a panelist reviewer for National Institute of Health (NIH), July 2020.

- Reviewer of a proposal for National Science Foundation (NSF), Apr. 2020.
- Served as a panelist reviewer for National Institute of Health (NIH), Mar 2020.
- Served as a panelist reviewer for National Institute of Health (NIH), Nov. 2019.
- Served as a panelist reviewer for National Institute of Health (NIH), Mar. 2019.
- Served as a panelist reviewer for National Institute of Health (NIH), Jun. 2018.
- Served as a panelist reviewer for CISE Directorate, National Science Foundation (NSF), Jun. 2017.
- Served as a panelist reviewer for National Institute of Health (NIH), Jun. 2017.
- Served as a panelist reviewer for CISE Directorate, National Science Foundation (NSF), Feb. 2017.
- Served as an external referee on Discovery Grant Review Process for Natural Sciences and Engineering Research Council (NSERC), Canada, 2016.
- Served as a panelist reviewer for CISE Directorate, National Science Foundation (NSF), Jun. 2016.
- Served as a panelist reviewer for CISE Directorate, National Science Foundation (NSF), Dec 2015.
- Served as a panelist reviewer for CISE Directorate, National Science Foundation (NSF), Jun. 2015.
- Served as a panelist reviewer for CISE Directorate, National Science Foundation (NSF), Jul. 2013.
- Served as an external referee on Discovery Grant Review Process for Natural Sciences and Engineering Research Council (NSERC), Canada, 2013.

Article Reviewer:

1. Ad hoc J. Reviewer, J. of Neurocomputing, 2020
2. Ad hoc J. Reviewer, IEEE Transactions of Biomedical Engineering (TBME), 2020
3. Ad hoc J. Reviewer, IEEE Transactions of Neural Systems and Rehabilitation Engineering, 2020
4. Ad hoc J. Reviewer, IEEE Journal of Biomedical and Health Informatics (JBHI), 2020
5. Ad hoc J. Reviewer, IEEE Access, 2020
6. Ad hoc J. Reviewer, Plos1, 2020
7. Ad hoc J. Reviewer, IEEE Trans VLSI, 2019
8. Ad hoc J. Reviewer, Elsevier Neucom, 2019
9. Ad hoc J. Reviewer, Biomedical Signal Processing and Control, 2019
10. Ad hoc J. Reviewer, IEEE TNSRE, 2019
11. Ad hoc J. Reviewer, Measurements, 2019
12. Ad hoc J. Reviewer, Eurasip Adv Sig Processing, 2019
13. Ad hoc J. Reviewer, IEEE Access, 2019
14. Ad hoc J. Reviewer, MDPI Sensors, 2019
15. Ad hoc J. Reviewer, Biomedical Signal Processing and Control, 2019
16. Ad hoc J. Reviewer, PlosOne, 2019
17. Ad hoc J. Reviewer, Measurements, 2019
18. Ad hoc J. Reviewer, Eurasip Adv Sig Processing, 2019
19. Ad hoc J. Reviewer, IEEE TBioCAS, 2019
20. Ad hoc J. Reviewer, IEEE Access, 2019
21. Ad hoc J. Reviewer, Hindawi, 2019
22. Ad hoc J. Reviewer, IEEE Access, 2018
23. Ad hoc J. Reviewer, IEEE Consumer Electronics Magazine, 2018
24. Ad hoc J. Reviewer, J. of the Intl. Measurement Confederation, 2018
25. Ad hoc J. Reviewer, J. of Comp. Methods, 2018

26. Ad hoc J. Reviewer, PlosOne, 2018
27. Ad hoc J. Reviewer, MDPI Sensors J., 2018
28. Ad hoc J. Reviewer, Electronics Letter, 2018
29. Ad hoc J. Reviewer, IEEE Signal Processing Letter, 2018.
30. Ad hoc J. Reviewer, PlosOne Journal, 2017.
31. Ad hoc J. Reviewer, Electronics Letters, 2017.
32. Ad hoc J. Reviewer, Electronics Letters, 2017.
33. Ad hoc J. Reviewer, IEEE Sensors Journal, 2017.
34. Ad hoc J. Reviewer, Trans Learning Technologies, 2017.
35. Ad hoc J. Reviewer, EIT Electronic Letters, 2017.
36. Ad hoc J. Reviewer, Journal of Biomedical Health Informatics, 2017.
37. Ad hoc J. Reviewer, PlosOne Journal, 2017.
38. Ad hoc J. Reviewer, Trans Instrumentation and Measurement, 2017.
39. Ad hoc J. Reviewer, Intl J Distributed Sensor Networks, 2017.
40. Ad hoc J. Reviewer, Sensors & Actuators: B. Chemical, Elsevier Journal, 2016.
41. Ad hoc J. Reviewer, ACS Environmental Science & Technology J, 2016.
42. Ad hoc J. Reviewer, IEEE Tran Measurement & Instrumentation, 2016.
43. Ad hoc J. Reviewer, MDPI Sensors J, 2016.
44. Ad hoc J. Reviewer, Technology Interface International J, 2016.
45. Ad hoc J. Reviewer, Micromachines Journal, 2015.
46. Ad hoc J. Reviewer, Intl. J. of Modern Engineering, 2015.
47. Ad hoc J. Reviewer, IEEE Sensors Journal, 2015.
48. Ad hoc J. Reviewer, J. Laboratory Automation, 2014-2015.
49. Ad hoc J. Reviewer, Intl. J. Intelligent Systems Technologies and Applications, 2014.
50. Ad hoc J. Reviewer, IETE Technical Review, 2014.
51. Ad hoc J. Reviewer, Intl. Journal of Engineering Research & Innovation, 2014.
52. Ad hoc J. Reviewer, Journal of Zhejiang Univ. Science C, 2014.
53. Ad hoc J. Reviewer, IEEE Trans on Power Electronics, 2014.
54. Ad hoc J. Reviewer, Elsevier J: Sensors and Actuators B, 2014.
55. Ad hoc J. Reviewer, IEEE Transactions of Biomedical Circuits and Systems (TBCAS), 2013.
56. Ad hoc J. Reviewer, Elsevier J: Sensors and Actuators B, 2013.

Invited Talks:

1. "Multilayer Additive Printed Circuits", Presented to University of Memphis Research Foundation (UMRF), Oct. 24, 2019.
2. "Inkjet Printed, Disposable Biosensors", Presented to Visiting Chief Executive, Association of British Healthcare Industries, at University of Memphis, July 12, 2018.
3. "Flexible Electronics Fabrication Using Inkjet-printing Technology for Fully-passive Wireless Body-worn Patch Sensors", Department of Electronics, Carleton University, Ottawa, July 6, 2018.
4. "Inkjet Printed Sensors for Smart Health", Presented to Czech Academy of Sciences, at University of Memphis, May 10, 2018.
5. "Body-worn Physiological Sensors for Smart and Connected Community", Institute for Intelligent Systems (IIS) Speed Talks, University of Memphis, Memphis, TN, Apr. 20, 2018.

6. "Inkjet-printed Fully-passive Wireless Body-worn Disposable Sensors", Biomedical Engineering Seminar, University of Memphis, Memphis, TN, Feb. 23, 2018.
7. "Inkjet Printed Electronics", Materials Day, University of Memphis, Memphis, TN, Oct. 6, 2017.
8. "Inkjet Printed Wearable Fully-passive Sensors for Physiological Data", Southeast Symposium on Contemporary Engineering Topics (SSCET), Jackson, MS, Aug. 26, 2016.
9. "Real-Time Ocular Artifact Removal from EEG Signals on a Wearable Embedded Device", IIS Speed Date, University of Memphis, April 22, 2016.
10. "Body-worn Bioelectronic Embedded Devices for physiological measurement", FIT Memphis Research Foundation, 31 Mar. 2015.
11. "Wearable Body Sensors for Neuro-Physiological Signal Monitoring in Natural Environments", IEEE AP-MTT Columbus Chapter, Ohio State University, 5 Dec. 2014.
12. "Wearable and body-worn embedded systems for in-situ patient monitoring", Semmes Murphey Neurologic & Spine Institute, Semmes Murphey Clinic Educational Seminar Series, 14 Aug. 2014.
13. "Wearable and Implantable Embedded Devices for Biomedical Applications", Department of Electrical and Computer Engineering Advisory Board Meeting, 2 May 2014.
14. "Monitoring of Cognitive States in Practical Settings: A Novel Reconfigurable Wearable Sensor Architecture – BRAiNsense", IIS Speed Date, University of Memphis, April 25, 2014.
15. "Wearable Body Sensors for Real-Life Real-Time Patient Monitoring", 1st iBME Symposium, UTK, April 20-21, 2014.
16. "Towards Patient-Centric Healthcare Solution: Ambulatory Electroencephalography Embedded System and Algorithms for Long Duration Continuous Monitoring of Neurological Disorders", University of Tennessee at Knoxville (UTK), Knoxville TN, Aug. 16, 2013.
17. "Embedded Systems for Biomedical Applications", Department of Physics, the University of Memphis, Memphis TN, Nov. 28, 2012.
18. "Biomedical Microdevices and Sensors for Embedded Systems", Department of Electrical and Computer Engineering, the University of Memphis, Memphis TN, Apr. 2012.

7. AWARDS/SCHOLARSHIPS/HONORS

- ✧ Dr. Morshed is the recipient of the **Faculty Research Award** from Herff College of Engineering, University of Memphis, May 2020.
- ✧ Dr. Morshed has received **Faudree Professorship** (2019-2020) award at the University of Memphis for his outstanding contribution to the University's educational, research, outreach and service missions.
- ✧ Dr. Morshed has been recognized as an **IEEE Senior Member**, April 2019.
- ✧ Dr. Morshed has received **2018 MHTI Scholar award** by NIH mHealth Summer Training Institute at UCLA, July 29 - Aug. 3, 2018. (<https://mhealth.md2k.org/scholars/2018-scholars>)
- ✧ The conference paper titled "Accessing Differential Measures with a Conjugate Coil-pair for Wireless Resistive Analog Passive (WRAP) ECG Sensors" by **Mohammad Abu-Saude and Bashir I. Morshed** has received the **Best Paper award** at the 18th Annual IEEE Intl. Conf. on Electro Information Technology (EIT2018), May 3-5, 2018 at Rochester, Michigan, USA.

- ✧ Awarded **the best poster** in the Department of EECE Poster Competition held at the University of Memphis on 24 April 2017. (Poster title: “PSC Optimization of 13.56-MHz Resistive Wireless Analog Passive Sensors”)
- ✧ Awarded **the best poster** in the Department of EECE Poster Competition held at the University of Memphis on 25 April 2016. (Poster title: “BRAINSens: Body-worn Reconfigurable Architecture of Integrated Network Sensors”)
- ✧ “**Excellent Demo Track Presentation**” Award for an exemplary demonstration of “Resistive Wireless Analog Passive Sensors (rWAPS)”, presented by B. I. Morshed and demonstrated by Babak Noroozi and Mohammad Abu-Saude, at the IEEE Radio & Wireless Week (RWW), Austin, TX, 24-27 Jan. 2016.
- ✧ Awarded **the best poster** in the Department of EECE Poster Competition held at the University of Memphis on 25 April 2014. (Poster title: “Wireless Analog Passive Biosignal Sensors Based on Frequency Selective Backscattering”)
- ✧ Awarded **2nd prize at the national level competition** of 2013 DRS Student Infrared Imaging Competition. (Project title: “Forgery-proof identification using sweat gland distribution”)
- ✧ Ontario Graduate Scholarship for Science and Technology (OGSST), 2008
- ✧ Academic Excellence for Domestic Students, Carleton University, 2007, 2008
- ✧ Ontario Graduate Scholarship (OGS), Ontario ministry of training, 2007
- ✧ Indira Gandhi Memorial Fellowship, Carleton University, 2004, 2006
- ✧ Academic Excellence for International Students, Carleton University, 2005, 2006
- ✧ **Canadian Commonwealth Scholarship and Fellowship**, Government of Canada, 2002-2004
- ✧ Dean List Award, Bangladesh Univ. of Engineering and Technology, 1994 to 1998
- ✧ Merit List Award, Bangladesh Univ. of Engineering and Technology, 1994 to 1998

8. PROFESSIONAL MEMBERSHIPS

- ✧ Senior Member, IEEE (Institute of Electrical and Electronics Engineers), 2019 – now
- ✧ Member, IEEE (Institute of Electrical and Electronics Engineers), 2012 – 2019
- ✧ Member, IEEE EMBS (IEEE Engineering in Medicine and Biology Society), 2008 - now
- ✧ Member, SPIE – The international society for optical engineering, 2012 – 2013
- ✧ Student Member, IEEE (Institute of Electrical and Electronics Engineers), 2004 - 2011
- ✧ Registered Member, CMC (Canadian Microelectronics Corporation), 2002 – 2011