

## Ahmed Abdelgawad

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### Professional Preparation

- PhD: University of Louisiana at Lafayette, Computer Engineering, 2007 - 2011.
- M.Sc.: University of Louisiana at Lafayette, Computer Engineering, 2005 - 2007.
- M.Sc.: Mansoura University, Electrical Engineering, 2001 - 2003.
- B.S.: Mansoura University, Electrical Engineering, 1992 -1997.

### Appointments

- Professor, Central Michigan University, 2022 – Present.
- Associate Professor, Central Michigan University, 2017 – 2022.
- Assistant Professor, Central Michigan University, 2012 – 2017.
- Design Aids & Automation Engineering Professional at Semiconductor Research and Development Center, IBM, 2011 – 2012.
- Research Assistant, University of Louisiana at Lafayette, USA 2005 – 2011.
- Teaching Assistant, National Telecommunication Institute, Egypt 1997 – 2005

### Keynote Speeches

1. “Internet of Things (IoT) Foundations, Challenges, and Applications” The International Conference on Computing, Intelligence and Data Analytics (ICCIDA), September 16-17, 2022, Turkey.
2. “Using Internet of Things (IoT) to Fight Covid-19” International Conference on Mechatronics and Electrical Systems (ICMES2022), September 23-25, 2022, Shanghai, China.
3. “Build Your Own Internet of Things (IoT) Architecture”, The 8th Int'l Conference on Signal and Image Processing (CSIP 2021), January 5-7, 2021, Sanya, China.
4. “Internet of Things (IoT): Opportunities and Challenges”, 1st International Conference on Artificial Intelligence & Modern Assistive Technology (ICAIMAT) from November 24-26, 2020, Virtual conference.
5. “Using Internet of Things (IoT) to Fight Covid-19”, The 3rd International Conference on Future Smart Cities (FSC), November 14-16, 2020, Malaysia.
6. “Internet of Things (IoT): Signals, Communications, Applications, Challenges, and Future Research”, 2nd International Virtual Conference on Multidisciplinary Research 2020 (IVCMR 2020), in Walnut, California, USA, on November 14, 2020.
7. “All What You Need to Know About Internet of Things (IoT)”, EAI International Conference on Forthcoming Networks and Sustainability in the IoT Era (FoNeS-IoT), September 1-2, 2020, Virtual conference.
8. “How Will the Internet of Things (IoT) Impact E-commerce Business?”, The 2019 International Conference on E-Business and E-commerce Engineering (EBEE 2019), December 21-23, 2019, Bali, Indonesia.
9. “Internet of Things (IoT): Signals, Communications, Challenges, and Future Research” The 2nd International Conference on Wireless Communications, Signal and Image Processing (WCSIP-BT 2019), December 13-15, 2019, Bangkok, Thailand.
10. “How Internet of Things (IoT) Will Change our Education” 2019 International Conference on Modern Educational Technology (ICMET 2019), June 28-30, 2019, Nanjing, China.
11. “Internet of Things (IoT): From Sensors to Cloud”, The 6th Conference on Sensors and Networks (CSN 2019), July 19-21, 2019, Guilin, China.
12. “Signal Processing Art for Internet of Things (IoT)” International Conference on Automation, Control and Robots (ICACR2019), October 11-13, 2019, Prague, Czech Republic.
13. “Signal Processing Art for Internet of Things (IoT)” International Conference on Mechatronics and Electrical Systems (ICMES2019), October 11-13, 2019, Prague, Czech Republic.
14. “Opportunities and Challenges in Internet of Things (IoT)” University of Sharjah, March 13<sup>th</sup>, 2019, UAE.
15. “Internet of Things (IoT): Signals, Communications, Applications, Challenges, and Future Research” 6<sup>th</sup> International Conference on Signal Processing and Integrated Networks, 7-8 March, 2019, Amity University, India.
16. “How the Internet of Things will Change our Future Education” 2<sup>nd</sup> International Students’ Conference on Innovations in Science and Technology, 7-9 March, 2019, Kolkata, India.
17. “Internet of Things (IoT) Foundations, Challenges, and Applications” at King Abdullah University of Science and Technology, November 6, 2018, Thuwal, KSA.

18. "Internet of Things (IoT): Sensors and Signal Processing" International Conference on Automation, Control and Robots (ICACR2018), October 12-14, 2018, Bangkok, Thailand.
19. "Internet of Things (IoT): Sensors and Signal Processing" International Conference on Mechatronics and Electrical Systems (ICMES2018), October 12-14, 2018, Bangkok, Thailand.
20. "Internet of Things (IoT): From Sensors to Cloud", International Conference on Smart Digital Environment (ICSDE'18), October 18-20, 2018 Rabat, Morocco.
21. "Internet of Things (IoT): Vision, Challenges, Applications, and Demonstration" Live Webinar, Madinah Institute for Leadership and Entrepreneurship (MILE), March 6<sup>th</sup>, 2018, World.
22. "Internet of Things (IoT): From Sensors to Cloud" 5th International Conference on Signal Processing and Integrated Networks, 22 - 23 February 2018, Amity University, India.
23. "How Internet of Things (IoT) Will Change our Lives" The 1st Saudi International Exhibition for Internet of Things, 28-30 January 2018, Riyadh, KSA.
24. "Internet of Things (IoT): Vision, Challenges, Applications, and Demonstration" The IEEE International Conference on Microelectronics (ICM), 10-13 December, 2017, Lebanon.
25. "A Modular Internet of Things (IoT) Framework: From Sensors to Cloud", November 5th, 2016, Wayne State University, MI, USA.
26. "Internet of Things (IoT): Foundation to Applications", Nexteer company, September 13, 2016, USA.
27. "Internet of Things (IoT): Foundations to Applications", Oakland University, April 9, 2016, USA.
28. "IoT Fundamentals" American Society for Engineering Education (ASEE) Conference, March 18-19, 2016, MI, USA.
29. "Cognitive Wireless Sensor Network: Its Applications in Health Monitoring for Historical Sites", International Conference on Energy Aware Computing (ICEAC 2015), March 24-26, 2015, Cairo, Egypt.
30. "Data Fusion Algorithms for Constrained Systems", March 13, 2014, University of Bahrain, Bahrain.

#### **Short Courses**

1. "IoT and Artificial Intelligence", Vel Tech, R&D Institute of Science and Technology, 4-6 March 2022, Chennai, India
2. "Build Your Own Internet of Things (IoT) Architecture", University of Cincinnati, October 26, 2020.
3. "Using Internet of Things (IoT) to Fight Covid-19", International Autumn School on Internet of Things, Chemnitz University of Technology, September 28-October 3, 2020, Germany.
4. "Internet of Things (IoT): Signals, Communications, Applications, Challenges, and Future Research", International Winter School - Internet of Things, Chemnitz University of Technology, November 29-December 6, 2019, Germany.
5. "Internet of Things (IoT): From Sensors to Cloud", Vel Tech, R&D Institute of Science and Technology, 4-6 March 2019, Chennai, India
6. "Internet of Things (IoT) Applications" The 2nd Saudi International Exhibition for Internet of Things, 13-15 February 2019, Riyadh, KSA.

#### **Tutorials/Workshops**

1. "Internet of Things (IoT): From Sensors to Cloud", IEEE International Conference on Multimedia and Expo (ICME) 2021, July 5-9, 2021, Virtual.
2. "Build Your Own Internet of Things (IoT) Architecture", The 63<sup>rd</sup> IEEE International Midwest Symposium on Circuits and Systems (MWSCAS2020), 9-12 August 2020, Springfield, MA, USA.
3. "Internet of Things (IoT): Circuits, Systems Applications, Challenges, and Future Research", The IEEE Asia Pacific Conference on Circuits and Systems (APCCAS 2019), 11-14 November 2019, Bangkok, Thailand.
4. "Internet of Things (IoT): Circuits, Systems Applications, Challenges, and Future Research", The 62<sup>nd</sup> IEEE International Midwest Symposium on Circuits and Systems (MWSCAS2019), 4-7 August 2019, Dallas, USA.
5. "Internet of Things (IoT): Signals, Communications, Applications, Challenges, and Future Research", The 32<sup>nd</sup> IEEE International System-on-Chip Conference (SOCC2019), 3-6 September 2019, Singapore.
6. "Internet of Things (IoT): Signals, Communications, Applications, Challenges, and Future Research", The IEEE International Workshop on Signal Processing Systems (SiPS 2019), 20-23 October 2019, Nanjing, China.
7. "Internet of Things (IoT): From Sensors to Cloud", G. H. Raisoni College of Engineering, 10 March 2019, Nagpur, India.
8. "Internet of Things (IoT): Circuits, Architectures, Systems, and Demonstration", The IEEE Asia Pacific Conference on Circuits and Systems (APCCAS 2019), 26-30 October 2018, China.

#### **Webinars**

1. "Using Internet of Things (IoT) to Fight Covid-19", IEEE UAEU Student Branch, June 8, 2022, UAE.
2. "Using Internet of Things (IoT) to Fight Covid-19", Measurement and Sensor Technology (MST) Lecture Series - Trends in Science and Technology, Chemnitz University of Technology, July 1<sup>st</sup>, 2020, Germany.
3. "Internet of Things (IoT): Opportunities and Challenges", Institution's Innovation Council (IIC) and Department of Electronics and Communication Engineering, ASET, Amity University, May 1<sup>st</sup>, 2020, Noida, UP, India.

## Awarded Grant

1. FRCE: "Structural Health Monitoring: A Reliable Damage Detection Technique." (Awarded January 2016 – August 2017).
2. NSF: "US-Bahrain Cooperative Research: Intelligent Video Surveillance Systems for Hajj" (Awarded 2013-2014).
3. NSF: Design and Implementation of Experimental High-Resolution Imaging Payload System for Nano Satellites, (Awarded 2011-12).
4. NSF: Ubiquitous Computing: Sensors and Wireless Sensor Networks. (Awarded 2009-11).

## Publications

### • Books:

1. K. F. Haque, A. Abdelgawad, "Prospects of Internet of Things (IoT) and Machine Learning to Fight Against COVID-19," *Book Chapter, Springer*, 2020.
2. Elarabi, T.; Abdelgawad, A.; Bayoumi, M "Real-Time Heterogeneous Video Transcoding for Low-Power Applications" *Springer*, ISBN: 978-3-319-06070-5, 2014.
3. Abdelgawad, A.; Bayoumi, M "Resource-Aware Data Fusion Algorithms for Wireless Sensor Networks" *Springer*, ISBN 978-1-4614-1349-3, 2012.

### • Journals:

1. Haque, K.F.; Abdelgawad, A.; Yelamarthi, K., "Comprehensive Performance Analysis of Zigbee Communication: An Experimental Approach with XBee S2C Module," *Sensors* 2022, 22, 3245. <https://doi.org/10.3390/s22093245>
2. Yanambaka, V. P.; Abdelgawad, A; Yelamarthi, K., "PIM: A PUF-Based Host Tracking Protocol for Privacy Aware Contact Tracing in Crowded Areas," *the IEEE Consumer Electronics Magazine*, vol. 10, no. 4, pp. 90-98, 1 July 2021, doi: 10.1109/MCE.2021.3065215.
3. Haque, K.F.; Abdelgawad, A.; Yanambaka, V.P.; Yelamarthi, K., "LoRa Architecture for V2X Communication: An Experimental Evaluation with Vehicles on the Move,". *Sensors* 2020.
4. Haque, K.F.; Abdelgawad, A., "A Deep Learning Approach to Detect COVID-19 Patients from Chest X-ray Images," *AI*, vol 1, no. 3, p. 418-435, 2020.
5. Maitra, S., Yanambaka, VP., Puthal, D., Abdelgawad, A., Yelamarthi, K., "Integration of Internet of Things and blockchain toward portability and low-energy consumption," *Transaction on Emerging Telecommunications Technology*. 2020.
6. Haque, K.F.; Kabir, K.H.; Abdelgawad, A., "Advancement of Routing Protocols and Applications of Underwater Wireless Sensor Network (UWSN)—A Survey," *Journal of Sensors and Actuator Networks*, vol. 9, no. 2, pp. 19-50, 2020. doi:10.3390
7. Alnaeli, S.; Sarnowski, M.; Aman, S.; Abdelgawad, A.; Yelamarthi, K., "Source Code Vulnerabilities in IoT Software Systems," *Advances in Science, Technology and Engineering Systems Journal*, vol. 2, pp. 1502-1507, 2017.
8. Yelamarthi, K.; Aman, S.; Abdelgawad, A., "An Application-Driven Modular IoT Architecture," *Wireless Communications and Mobile Computing*, vol. 2017, Article ID 1350929, 16 pages, 2017. doi:10.1155/2017/1350929. Impact factor 1.899.
9. Abdelgawad, A.; Yelamarthi, K., "Internet of Things (IoT) Platform for Structure Health Monitoring," *Wireless Communications and Mobile Computing*, vol. 2017, Article ID 6560797, 10 pages, 2017. doi:10.1155/2017/6560797. Impact factor 1.899.
10. Abdelgawad, A.; Mahmud, A.; Yelamarthi, K., "Butterworth Filter Application for Structural Health Monitoring," *International Journal of Handheld Computing Research (IJHCR)*, vol. 7 no. 4, Oct-Dec 2016.
11. Ismail, Y.; Balbis, L.; Abdelgawad, A.; Mansour, H.; Fareed, F.; Mohsen, J., "6-DOF Robotic Arm Using Haptic Feedback Wired and Wireless Platforms" *International Journal of Computing and Network Technology*, vol. 4 no. 2, 2016.
12. Abdelgawad, A., "Distributed Kalman Filter with Fast Consensus for Wireless Sensor Networks," *Journal of Wireless Information Networks, Springer*, DOI 10.1007/s10776-016-0294-3, 2016. Impact factor 2.191.
13. Ismail, Y.; Abdelgawad, A.; El-Etriby, S., "High Speed On-Chip Multiple Cosine Transform Generator," *Journal of Real-Time Image Processing, Springer*, DOI 10.1007/s11554-015-0528-0, 2015. Impact factor 2.020.
14. Abdelgawad, A., "Auto-Localization System for Indoor Mobile Robot Using RFID Fusion" *Robotica Cambridge Journal*, doi:10.1017/S0263574714001106, 2014. Impact factor 0.939.
15. Ismail, Y.; Abdelgawad, A.; El-Medany, W.; Al-Junaied, H., "High Performance Architecture for Real-Time HDTV Broadcasting," *Journal of Real-Time Image Processing, Springer*, doi:10.1007/s11554-014-0430-1, 2014. Impact factor 2.020.

16. Abdelgawad, A., "Distributed Sand Monitoring Framework Using Wireless Sensor Networks" *Journal of Communications Engineering and Networks*, vol. 1 no. 1, pp. 1-10, Oct 2013
  17. Abdelgawad, A.; Bayoumi, M " Low Power Distributed Kalman Filter for Wireless Sensor Networks," Accepted for publication in *EURASIP Journal on Embedded Systems*, 2011.
  18. Abdelgawad, A.; Bayoumi, M " Remote Measuring for Sand in Pipelines Using Wireless Sensor Network," Accepted for publication in *IEEE Transactions on Instrumentation and Measurement*, 2011.
  19. Abdelgawad, A.; Ashour, I.; Abouelsoud. M., "Low Cost Single Chip Interface for ATE", *Al- Azhar University, faculty of engineering journal*, April 2003.
  20. Abdelgawad, A.; Ashour, I.; Abouelsoud. M., "Automatic Testing Equipment (ATE) On One Chip", *Mansoura University, faculty of engineering journal*, March 2003.
- **Other significant publications:**
    1. Saqib, N.; Haque, F.; Yanambaka, V.; Yelamarthi, K.; Abdelgawad, A., "D2D-LoRa Latency Analysis: An Indoor Application Perspective" IEEE 7th World Forum on Internet of Things, WF-IoT 2021, June 14-July 31 2021, Virtual conference.
    2. Mahmud, I.; Abdelgawad, A.; Yanambaka, V.; Yelamarthi, K., "Packet Drop and RSSI Evaluation for LoRa: An Indoor Application Perspective" IEEE 7th World Forum on Internet of Things, WF-IoT 2021, June 14-July 31 2021, Virtual conference.
    3. Sadhu, P.; Yanambaka, V.; Yelamarthi, K.; Abdelgawad, A., "Packet Drop and RSSI Evaluation for LoRa: An Indoor Application Perspective" IEEE 7th World Forum on Internet of Things, WF-IoT 2021, June 14-July 31 2021, Virtual conference.
    4. Haque, K.F.; Abdelgawad, A.; Yanambaka, V.; Yelamarthi, K., "A LoRa Based Reliable and Low Power Vehicle to Everything (V2X) Communication Architecture," *IEEE International Symposium on Smart Electronic Systems (IEEE-iSES)*, 14-16 December 2020, Chennai, India.
    5. Haque, K.F.; Haque, F.; Gandy, L.; and Abdelgawad, A., "Automatic Detection of COVID-19 from Chest X-ray Images with Convolutional Neural Networks," 2020 International Conference on Computing, Electronics & Communications Engineering (iCCECE), 2020, pp. 125-130, doi: 10.1109/iCCECE49321.2020.9231235.
    6. Maitra, S.; Yanambaka, V.; Abdelgawad, A.; Yelamarthi, K., "Securing a Vehicle Fleet Management Through Blockchain and Internet of Things," *IEEE International Symposium on Smart Electronic Systems (IEEE-iSES)*, 14-16 December 2020, Chennai, India.
    7. Haque, F.; Abdelgawad, A.; Yanambaka, V.; Yelamarthi, K., "Crop Yield Analysis Using Machine Learning Algorithms," *IEEE 6<sup>th</sup> World Forum on Internet of Things, WF-IoT 2020*, 2-16 June 2020, Virtual conference.
    8. Maitra, S.; Yanambaka, V.; Abdelgawad, A.; Puthal, D.; Yelamarthi, K., "Proof-of-Authentication Consensus Algorithm: Blockchain-Based IoT Implementation," *IEEE 6<sup>th</sup> World Forum on Internet of Things, WF-IoT 2020*, 2-16 June 2020, Virtual conference.
    9. Haque, K.F.; Abdelgawad, A.; Yanambaka, V.; Yelamarthi, K., "An Energy-Efficient and Reliable RPL for IoT," *IEEE 6<sup>th</sup> World Forum on Internet of Things, WF-IoT 2020*, 2-16 June 2020, Virtual conference.
    10. Khalil, K.; Elgazzar, K.; Abdelgawad, A.; Bayoumi, M., "A Security Approach for CoAP-Based Internet of Things Resource Discovery," *IEEE 6<sup>th</sup> World Forum on Internet of Things, WF-IoT 2020*, 2-16 June 2020, Virtual conference.
    11. Ahmed, M.; Yanambaka, V.; Abdelgawad, A.; Yelamarthi, K., "Physical Unclonable Function Based Hardware Security for Resource Constraint IoT Devices," *IEEE 6<sup>th</sup> World Forum on Internet of Things, WF-IoT 2020*, 2-16 June 2020, Virtual conference.
    12. Haque, K.F.; Zabin, R.; Yelamarthi, K.; Yanambaka, V.; Abdelgawad, A., "An IoT Based Efficient Waste Collection System with Smart Bins," *IEEE 6<sup>th</sup> World Forum on Internet of Things, WF-IoT 2020*, 2-16 June 2020, Virtual conference.
    13. Haque, F.; Abdelgawad, A.; Yanambaka, V.; Yelamarthi, K., "Crop Yield Prediction Using Deep Neural Network," *IEEE 6<sup>th</sup> World Forum on Internet of Things, WF-IoT 2020*, 2-16 June 2020, Virtual conference.
    14. Shaik, A.; Kane, A.; Yelamarthi, K.; Walsh, F; Abdelgawad, A., "Connected Vehicle: Monitor Automotive Embedded Systems via IoT Protocol UP", *The 2019 3rd International Conference on Automation, Control and Robots (ICACR 2019)*, 11-13 October, 2019.
    15. Haque, F.; Zhou, W.; Abdelgawad, A.; Walsh, F, Yelamarthi, K., "IoT -Based Approach to Monitor Parking Space in Cities", *The 9th International Conference on Computer Science, Engineering and Applications (CCSEA 2019)*, 13-14 July, 2019.
    16. Maitra, S.; Yelamarthi, K.; Abdelgawad, A., "Lab in a Box: A Rapidly Deployable Environmental Monitoring IoT System", *The 62nd IEEE International Midwest Symposium on Circuits and Systems, MWSCAS 2019*, 4-7 August, 2019.
    17. Maitra, S.; Richards, D.; Abdelgawad, A.; Yelamarthi, K., "Performance Evaluation of IoT Encryption Algorithms: Memory, Timing, and Energy," *IEEE Sensors Applications Symposium (SAS) 2019*, 11-13 March. 2019.

18. Hossain, S.; Abdelgawad, A., "Using Artificial Intelligence to Improve Classroom Teaching", *International Conference on Industrial Application of Engineering Science (ICIAES) 2019*, March 15, 2019.
19. Hossain, S.; Abdelgawad, A., "SMART Shower using IoT Applications", *International Conference on Industrial Application of Engineering Science (ICIAES) 2019*, March 15, 2019.
20. Shaik, A.; Bowen, N.; Bole, J.; Kunzi, G.; Bruce, D.; Abdelgawad, A.; Yelamarthi, K., "Smart Car: An IoT Based Accident Detection System," *IEEE Global Conference on Internet of Things (GCIoT2018)*, December 5-7, 2018.
21. Richards, D.; Abdelgawad, A.; Yelamarthi, K., "How Does Encryption Influence Timing in IoT?," *IEEE Global Conference on Internet of Things (GCIoT2018)*, December 5-7, 2018.
22. Stevens, M.; Horne, M.; Yao, Y.; Wang, J.; Abdelgawad, A., "Using Internet of Vehicle Technology (IoV) for Decreased Medical Response Times", *International Conference on Smart Digital Environment (ICSDE2018)*, October 18-20, 2018.
23. Hossain, S.; Abdelgawad, A., "Smart Refrigerator Based on Internet of Things (IoT): An Approach to Efficient Food Management", *International Conference on Smart Digital Environment (ICSDE2018)*, October 18-20, 2018.
24. Stevens, M.; Abdelgawad, A., "Android Application for Improved Engineering Student Interaction", *3rd International Conference on Mechatronics and Electrical Systems (ICMES2018)*, October 12-14, 2018.
25. Mahmud, A.; Abdelgawad, A.; Yelamarthi, K., "Improved RPL for IoT Applications," *61st IEEE International Midwest Symposium on Circuits and Systems, MWSCAS 2018*, 5-8 August, 2018.
26. Alexander, F.; Olumolade, O.; Abdelgawad, A.; Yelamarthi, K., "An IoT Enabled Vehicle and Smart Home Connected System for Optimized Energy Efficiency" *IEEE International Conference on Electro Information Technology (EIT 2018)*, Rochester, Michigan, U.S.A., 3-5 May, 2018.
27. Mahmud, A.; Bates, K.; Wood, T.; Abdelgawad, A.; Yelamarthi, K., "A Complete Internet of Things (IoT) Platform for Structural Health Monitoring (SHM)," *IEEE 4th World Forum on Internet of Things, WF-IoT 2018*, 5-8 February 2018.
28. Shaban, M.; Abdelgawad, A., "A Study of Distributed Compressive Sensing for the Internet of Things (IoT)," *IEEE 4th World Forum on Internet of Things, WF-IoT 2018*, 5-8 February 2018.
29. Yelamarthi, K.; Forde, A.; Olumolade, O.; Abdelgawad, A.; Shabib, I., "An IoT Enabled Automobile and Smart Home Connected System for Improved Energy Efficiency" *The International Conference on Cognitive Informatics & Soft Computing (CISC-2017)*, Hyderabad, India, December 20-21, 2017.
30. Mahmud, A.; Abdelgawad, A.; Yelamarthi, K.; Ismail, Y., "Signal Processing Techniques for IoT-based Structural Health Monitoring," *28th IEEE International Conference on Microelectronics, ICM 2017*, 10-13 December, 2017.
31. Yelamarthi, K.; DeJong, B.; Kaya, T.; Abdelgawad, A.; Shabib, I., "Research Experiences for School Teachers and Community College Instructors in Smart-Vehicles: Initial Implementation and Assessment" *The 2017 American Society of Engineering Education (ASEE) Conference*, Columbus, Ohio, June 25, 2017.
32. Weis, A.; Strandkov, M.; Yelamarthi, K.; Aman, S.; Abdelgawad, A., "Rapid Deployment of IoT Enabled System for Automobile Fuel Range and Gas Price Location" *IEEE International Conference on Electro Information Technology (EIT 2017)*, Lincoln, Nebraska, U.S.A., 14-17 May, 2017.
33. Lake, M.; Wernette, J.; Khan, T.; A. Abdelgawad, "Design of a Structural Health Monitoring and Notification System," *IEEE International Conference on Electro Information Technology (EIT 2017)*, Lincoln, Nebraska, U.S.A., 14-17 May, 2017.
34. Aman, S.; Quint, C.; Yelamarthi, K.; Abdelgawad, A., "Sensing and Classifying Indoor Environments: An IoT Based Portable Tour Guide System," *IEEE Sensors Applications Symposium, SAS 2017*, 13-15 Mar. 2017.
35. Mahmud, A.; Abdelgawad, A.; Yelamarthi, K., "Low Power RPL for Internet of Things (IoT)," *The 42nd IEEE International Conference on Acoustics, Speech and Signal Processing, ICASSP 2017*, 5-9 Mar 2017.
36. Aman, S.; Yelamarthi, K.; Abdelgawad, A., "Implementation of a Modular IoT Framework with Scalability and Efficient Routing," *The 42nd IEEE International Conference on Acoustics, Speech and Signal Processing, ICASSP 2017*, 5-9 Mar 2017.
37. Yelamarthi, K.; Abdelgawad, A.; Khattab, A., "An Architectural Framework for Low-Power IoT Applications," *27th IEEE International Conference on Microelectronics, ICM 2016*, 17-20 December, 2016.
38. Khattab, A.; Abdelgawad, A.; Yelamarthi, K., "Design and Implementation of a Cloud-based IoT Scheme for Precision Agriculture," *27th IEEE International Conference on Microelectronics, ICM 2016*, 17-20 December, 2016.
39. Aman, S.; Yelamarthi, K.; Abdelgawad, A.; Alnaeli, S., "Parallelization in Software Systems for WSN and IoT," *IEEE 3rd World Forum on Internet of Things, WF-IoT 2016*, 2-14 December 2016.
40. Alnaeli, S.; Sarnowski, M.; Aman, S.; Abdelgawad, A.; Yelamarthi, K., "Vulnerable C/C++ Code Usage in IoT Software Systems," *IEEE 3rd World Forum on Internet of Things, WF-IoT2016*, 2-14 December 2016.



41. Trent, M.; Abdelgawad, A.; Yelamarthi, K., "A Smart Wearable Navigation System for Visually Impaired," *2nd EAI International Conference on Smart Objects and Technologies for Social Good*, 30 November-1 December, 2016.
42. Abdelgawad, A.; Khattab, A.; Yelamarthi, K., "IoT-Based Health Monitoring system for Active and Assisted Living," *2nd EAI International Conference on Smart Objects and Technologies for Social Good*, 30 November- 1 December, 2016.
43. Aman, S.; Jiang, H.; Quint, C.; Yelamarthi, K.; Abdelgawad, A., "Reliability Evaluation of iBeacon for Micro-Localization," *The 7th IEEE Annual Ubiquitous Computing, Electronics & Mobile Communication Conference*, 20 - 22 October 2016.
44. Alnaeli, S.; Sarnowski, M.; Aman, S.; Abdelgawad, A.; Yelamarthi, K., "On the Evolution of Mobile Computing Software Systems and C/C++ Vulnerable Code," *The 7th IEEE Annual Ubiquitous Computing, Electronics & Mobile Communication Conference*, 20 - 22 October 2016.
45. Abdelgawad, A.; Yelamarthi, K., " Structural Health Monitoring: Internet of Things Application," *59th IEEE International Midwest Symposium on Circuits and Systems, MWSCAS 2016*, 16-19 October 2016.
46. Darwich, M.; Abdelgawad, A.; Bayoumi, M., " A Survey on the Power and Robustness of FinFET SRAM," *59th IEEE International Midwest Symposium on Circuits and Systems, MWSCAS 2016*, 16-19 October 2016.
47. Morelli, T.; Coggins, E.; Andrew, K.; Yelamarthi, K.; Abdelgawad, A., " Virtual Reality Navigation Simulation for Users who are Blind," *59th IEEE International Midwest Symposium on Circuits and Systems, MWSCAS 2016*, 16-19 October 2016.
48. Laubhan, K.; Talaat, K.; Riehl, S.; Morelli, T.; Abdelgawad, A.; Yelamarthi, K., " A Four-Layer Wireless Sensor Network Framework for IoT Applications," *59th IEEE International Midwest Symposium on Circuits and Systems, MWSCAS 2016*, 16-19 October 2016.
49. Trent, M.; Abdelgawad, A.; Yelamarthi, K., " An Internet of Things Enabled Wearable Navigation System for Blind," *59th IEEE International Midwest Symposium on Circuits and Systems, MWSCAS 2016*, 16-19 October 2016.
50. Myers, A.; Mahmud, A.; Abdelgawad, A.; Yelamarthi, K., "Toward Integrating Structural Health Monitoring with Internet of Things," *IEEE International Conference on Electro/Information Technology*, 19-21 May, 2016.
51. Aman, S.; Jiang, H.; Mahmud, A.; Abdelgawad, A.; Yelamarthi, K., "A Sensor Fusion Methodology for Dynamic Obstacle Avoidance Robot," *IEEE International Conference on Electro/Information Technology*, 19-21 May, 2016.
52. Laubhan, K.; Talaat, K.; Riehl, R.; Aman, S.; Abdelgawad, A.; Yelamarthi, K., "A Low-Power IoT Framework: From Sensors to the Cloud," *IEEE International Conference on Electro/Information Technology*, 19-21 May, 2016.
53. Trent, M.; Laubhan, K.; Abdelgawad, A.; Yelamarthi, "Low-Cost Ultrasonic Obstacle-Avoidance System using FPGA" *The 2016 American Society of Engineering Education (ASEE) Conference*, March 18-19, 2016.
54. Wernette, J.; Myers, A.; Schrauben, N.; Yang, T.; and Abdelgawad, A., "Structure Damage Localization by a Reliable Guided Waves Damage Detection Technique" *The 2016 American Society of Engineering Education (ASEE) Conference*, March 18-19, 2016.
55. Qatu, K.; Abdelgawad, A.; Yelamarthi, K., "Structure Damage Localization Using a Reliable Wave Damage Detection Technique," *the International Conference on Electrical, Electronics, and Optimization Techniques (ICEEOT 2016)*, 3-5 March 2016.
56. Trent, M.; Laubhan, K.; Abdelgawad, A.; Yelamarthi, K., "An FPGA-based Portable Real-time Obstacle Detection and Notification System," *the International Conference on Electrical, Electronics, and Optimization Techniques (ICEEOT 2016)*, 3-5 March 2016.
57. Laubhan, K.; Trent, M.; Root, B.; Abdelgawad, A.; Yelamarthi, K., "A Wearable Portable Electronic Travel Aid for Blind," *the International Conference on Electrical, Electronics, and Optimization Techniques (ICEEOT 2016)*, 3-5 March 2016.
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71. Abdelgawad, A.; Bayoumi, M., "Sand Monitoring in Pipelines Using Distributed Data Fusion Algorithm," *IEEE Sensors Applications Symposium, SAS 2011*, pp. 22-24 Feb. 2011.
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77. Abdelgawad, A.; Bayoumi, M., "High Speed and Area-Efficient Multiply Accumulate (MAC) Unit for Digital Signal Processing Applications," *IEEE International Symposium on Circuits and Systems, ISCAS 2007*, pp.3199-3202, 27-30 May 2007.
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79. Ashour, I.; Abdelgawad, A., "Data Acquisition and Signal Processing PC-Based Harmonic Power Analyzer System" *National Radio Science Conference (NRSC) 2004*.

### **Courses I have Taught Past Years**

1. EGR 190: Digital Circuits 3 (3-0)
2. EGR 390: Computer System Design using HDL 3 (3-0)
3. EGR 393: Circuit Lab 3 (3-0)
4. EGR 480: Digital Integrated Circuit Design with FPGAs 3 (3-0)
5. EGR 481: Embedded System Design 3 (3-0)
6. EGR 482: Design and Organization of Computer Hardware Sys. 3 (3-0)
7. EGR 484: Digital Signal Processing 3 (3-0)
8. EGR 597A: Wireless Sensor Networks 3 (3-0)
9. EGR 597B: Internet of Things (IoT) 3 (3-0)
10. EGR 685: Seminar: Current Topics in Engineering 1 (1-0)
11. EGR 489: Senior Design I 3 (3-0)
12. EGR 499: Senior Design II 3 (3-0)

## **Synergistic Activities (selected)**

### **• University Service**

1. Multicultural and Diversity Education Council, 2015-2017.
2. CSE Representative at Faculty Association (FA), 2016-End of 2017.

### **• College Service:**

1. CSE Web Update Committee, three years, 2014-present.
2. Curriculum Committee, Spring 2019.

### **• School Services:**

1. Master of Science in Engineering (MSE) Coordinator, Fall 2021-Present.
2. Master of Science in Engineering (MSE) Member, 2017- Spring 2021.
3. Search committee to hire a new tenure track faculty in computer engineering, 2014, 2015, 2016, 2017, and 2018.
4. Attend the Michigan Engineering Colleges-Community Colleges Association (MEC-CCA) meeting as a SET representative, 2019.
5. I have organized, as a general chair, the IEEE Region 4 Industrial Internet of Things Symposium at CMU, 22 Nov. 2019.
6. I have organizing, as a program chair, the 2021 IEEE International Electro/Information Technology Conference, at CMU, May 13-15, 2021.
7. Michigan Engineering Colleges-Community Colleges Association (MEC-CCA) meeting for 2 years, 2012, 2104, 2015, 2016, and 2017.
8. I have participated in the CMU and You Day last 2 years, 2013 and 2014.
9. I have participated in the Advising Night on Wednesday, October 23rd, 2013.
10. I have attended the Advising Workbench Demo on October 25th, 2013.
11. I have attended the Advisory Board Meeting on Friday November 8th, 2013.

### **• Proposal Review Panels:**

1. NSF review panel, March 18-19, 2013.
2. NSF review panel, January 25-28, 2016.
3. NSF review panel, January 22-25, 2018.
4. NSF review panel, January 22-25, 2020.

### **• Journal Editor:**

1. Associate Editors: SN Computer Science, Springer.
2. IEEE IoT Journal Special Issue on: Intrinsic Hardware Security for Internet of Things Infrastructure.
3. Guest Editor, MDPI Electronics journal: Special Issue "Cyber and Physical Systems Security in a Modern Connected Smart Cities Environment: Hardware and Software Approaches"
4. Hindawi: Journal of Electrical and Computer Engineering, Special Issue on Design of a Power Efficient, Intelligent, and Secure System for the Internet of Things (IoT).
5. Editor MDPI Sensors journal.
6. Co-editor MDPI Electronics journal.

### **• Journal Reviewer:**

1. IEEE IoT Journal
2. IEEE Communications Magazine.
3. IEEE Transactions on Instrumentation and Measurement.
4. IEEE Transactions on Very Large-Scale Integration Systems.
5. IEEE Journal on Emerging and Selected Topics in Circuits and Systems.
6. International Journal of Embedded Systems and Applications (IJESA).
7. Inter Journal of Computing and Digital Systems (IJCDS).

### **• Conference Reviewer:**

1. ISCAS: IEEE International Symposium on Circuits and Systems.
2. ICASSP: IEEE International Conference on Acoustics, Speech and Signal Processing.
3. WF-IoT: IEEE World Forum on Internet of Things.
4. SAS: IEEE Sensors Applications Symposium.
5. FICC: Future of Information and Communication Conference
6. 3ICT: International Conference on Innovation and Intelligence for Informatics, Computing, and Technologies
7. ICC: IEEE International Conference on Communications.
8. ICCSCE: IEEE International Conference on Control System, Computing and Engineering.
9. ASEE: American Society for Engineering Education.
10. ISCI: IEEE Symposium on Computers & Informatics.



11. ICECS: IEEE International Conference on Electronics, Circuits, and Systems.
  12. MWSCAS: IEEE International Midwest Symposium on Circuits and Systems.
  13. SCIS: IEEE Conference on Smart Cities and Innovative Systems
  14. SCEE: The Science Conference of Electrical Engineering
  15. ICAIIT: International Conference on Artificial Intelligence and Information Technology.
  16. MobiApps: The International Workshop on Mobile Applications.
- **Conference Committee:**
    1. Technical Program Chair: 7th IEEE World Forum on Internet of Things (WF-IoT2021), 20-24 June 2021, New Orleans.
    2. Program Chair: the 2021 IEEE International Electro/Information Technology Conference, at CMU, May 13-15, 2021.
    3. Technical Program Committee: 2nd International Virtual Conference on Multidisciplinary Research 2020 (IVCMR 2020), in Walnut, California, USA, on November 14, 2020.
    4. General Chair: IEEE Region 4 Industrial Internet of Things Symposium (IIoTS2019), 22 November, 2019, CMU, Michigan, USA.
    5. Technical Program Chair: 6<sup>th</sup> IEEE World Forum on Internet of Things (WF-IoT2020), 5-9 April 2020, New Orleans.
    6. Technical Program Chair: 61<sup>st</sup> IEEE International Midwest Symposium on Circuits and Systems (MWSCAS2018), 5-8 August 2018, Windsor, Canada.
    7. Special Session Co-Chair: The 31<sup>st</sup> IEEE International Conference on Microelectronics (ICM), 15-18 December, 2019, Egypt.
    8. PC: The 2019 International Conference on E-Business and E-commerce Engineering (EBEE 2019), Bali, Indonesia.
    9. Student Paper Contest PhD/MSc Forum chair: The IEEE International System-on-Chip Conference (SOCC2019), Singapore.
    10. PC: 9th International Conference on Emerging Trends in Engineering and Technology on Signal and Information Processing (ICETET-SIP-19), Nagpur, India.
    11. PC: The 2019 International Conference on Modern Educational Technology (ICMET2019), Nanjing, China.
    12. International Program Comm.: The International Workshop on Mobile Applications (MobiApps 2019), Istanbul, Turkey.
    13. TCP: IEEE International Conference on Communications (ICC2019): SAC Internet of Things Track.
    14. Publicity Co-Chair North America: IEEE WF-IoT 2019, Limerick, Ireland.
    15. PC: International Conference on Artificial Intelligence and Information Technology (ICAIIIT2019), Algeria.
    16. TPC: International Conference on Automation, Control and Robots (ICACR2018), Bangkok, Thailand.
    17. TPC: International Conference on Mechatronics and Electrical Systems (ICMES2018), Bangkok, Thailand.
    18. TPC: IEEE MWSCAS 2018, Windsor, Canada.
    19. TPC: IEEE International Conference on Communications (ICC 2018), Kansas City, MO, USA
    20. Publicity Co-Chair North America: IEEE WF-IoT 2018, Singapore.
    21. TPC Co-Chair: IoT International Innovation Conference 2017 (I3C'17), Saidia, Morocco.
    22. TPC Co-Chair: Global Internet of Things Summit (GIoTS 2017), Geneva, Switzerland.
    23. TPC: IoT Global Innovation Forum 2017, Barcelona.
    24. Finance chair and the M.Sc/PhD Forum chair: IEEE ICASSP 2017, New Orleans, LA, USA.
    25. Publicity Co-Chair North America: IEEE WF-IoT 2016, Reston, VA, USA.
    26. Chair: Special Session on Signal Processing for Internet-of-Things: IEEE WF-IoT 2016, Reston, VA, USA.
    27. Organizing Committee for IEEE ICECS 2015, Cairo, Egypt.
    28. Organizing Committee for IEEE ICECS 2013, Abu Dhabi, UAE.
    29. Organizing Committee for IEEE ICIP2009, Cairo, Egypt.
    30. Organizing Committee for IEEE ISCAS 2008, Seattle, Washington, USA.
    31. Organizing Committee for IEEE ISCAS 2007, New Orleans, LA, USA.
  - **Professional Leadership Roles:**
    1. Senior Member: IEEE, 2017 - Present.
    2. Chair: IEEE Northeastern Michigan Section, 2016 - Present.
    3. Young Professional Chair: IEEE Northeastern Michigan Section, 2016 - Present.
    4. Internet of Thing Special Interest Group (IoT SIG) of IEEE Signal Processing (SP) Society Founding Member. 2015-Present
    5. Technical Activities Chair: IEEE Northeastern Michigan Section, 2013-2015.
    6. Treasurer/ Vice president of IEEE-CS chapter at Univ. of Louisiana at Lafayette, 2006-2011.

- **PhD Students:**

1. Mahmoud Darwich
2. Ahmed Samoud
3. Kasim Khalil

- **M.Sc. Students:**

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2. Khalil Qatu
3. Anam Mahmoud
4. Aman Sayedul
5. Arif Shehraj
6. Sudip Mitra
7. Fatin Haque
8. Foyosal Haque

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6. Jason McNeely, University of Alaska Fairbanks, USA.
7. Tarek Elarabi, California State University Fresno, USA.
8. Kumar Yelamarthi, Central Michigan University, USA.
9. Ahmed Khattab, Cairo University, Egypt.
10. Yasser Ismail, Southern University and A&M College, USA.