Prof. Ashraf Zaher, PhD
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Publications:
a) Refereed Journals:
- Zaher, Ashraf A. and Hussain, G., and Al-Tabbakh, H. "Applying STEAMeD-based Education for Engineering Programs using Active Learning." *International Journal of Engineering Pedagogy,* submitted.
- Almani, M., Hussain, G., and Zaher, Ashraf A. "An Improved Technique for Energy-Efficient Starting and Operating Control of Single Phase Induction Motors." *IEEE ACCESS,* submitted.
- Hussain, G., Shafiq, M., Ahmed, Z., Zaher, Ashraf A., Rashid, Z., and Lehtonen, M. "An Improved Adaptive de-noising Technique for Online Condition Monitoring of High Voltage Equipment." *Electric Power Components and Systems,* 48.9-10 (2020): 1036-1048.
- Hussain, G., Zaher, Ashraf A., Hummes, D., Safdar, M., and Lehtonen, M. "Hybrid Sensing of Internal and Surface Partial Discharges in Air-insulated Medium Voltage Switchgear." *Energies*, 13.7 (2020): 1738:1-16.
- Zaher, Ashraf A., Hummes, D., and Hussain, G. "Intelligent nonmodel-based fault diagnosis of electric motors using current signature analysis." *Journal of Physics,* 1391.1 (2019) 012065:1-11.
- Zaher, Ashraf A. "On the Discretization of Continuous-Time Chaotic Systems for Digital Implementations." *Journal of Physics,* 1141.1 (2018): 012116:1-13.
- Zaher, Ashraf A. "Design of Model-Based Gain Scheduling Controllers for Nonlinear Systems." *Journal of Physics,* 1141.1 (2018): 012117:1-8.
- Zaher, Ashraf A. "Duffing Oscillators for Secure Communication." *Computers and Electrical Engineering,* 71(2018): 77-92.
- Zaher, Ashraf A. and Damaj, I. "Extending STEM Education to Engineering Programs at the Undergraduate College Level." *International Journal of Engineering Pedagogy,* 8.3 (2018): 4-16.
- Damaj, I., Zaher, Ashraf A., and Yousafzai, J. "Assessment and Evaluation Framework with Successful Application in ABET Accreditation" *International Journal of Engineering Pedagogy,* 7.3 (2017): 73-91.
- Davis, Edward D. and Zaher, Ashraf A. "Time-dependent generalization of the Nosé-Hoover thermostatting technique for molecular dynamics simulations." *Journal of Physics,* 490.1 (2014): 012101:1-4.
- Zaher, Ashraf A. "Digital Communication using a Novel Combination of Chaotic Shift Keying and Duffing Oscillators." *Journal of Innovative Computing, Information and Control*, 9.5 (2013): 1865-1879.
- Zaher, Ashraf A. and A. Abu-Rezq "On the Designs of Chaos-Based Secure Communication Systems." *Journal of Communications in Nonlinear Science and Numerical Simulations*, 6.9 (2011): 3721-3737.
- Zaher, Ashraf A. and A. Abu-Rezq "A Robust Hybrid Technique for Signature Verification using Intelligent Encoding of Spatiotemporal Data." *Journal of Innovative Computing, Information and Control*, 7.4 (2011): 1789-1818.
- Zaher, Ashraf A. and Zohdy, M. A. "Robust Motion Control of Biped Walking Robots." *WSEAS Transactions on Systems and Control*, 4.12 (2009), pp 613-624.
- Zaher, Ashraf A. and Abu-Rezq, A. "Controlling Chaos in a Chua's Circuit using Notch Filters." *Journal of Circuits, Systems and Computers*, 8.6 (2009): 1137-1153.
- Zaher, Ashraf A. "Improved chaos-based secure communication technique using a novel encryption function with an embedded cipher key." *Journal of Chaos, Solitons & Fractals*, 42.5 (2009): 2804-2814.
- Zaher, Ashraf A. "Robust Computer-Based Modeling and Simulation of both DC and AC PM Motors." *Journal of Computers and Their Applications*, 16.1 (2009): 1-12.
- Zaher, Ashraf A. and Abu-Rezq, A. "A Robust Nonmodel-Based Technique for Stabilizing Chaotic Systems with Constant Disturbance Input." *Journal of Bifurcation and Chaos*, 18.11 (2008): 3503-3514.

- Zaher, Ashraf A. and Abu-Rezq, A. "Adaptive model-reference control for a class of uncertain nonlinear systems using a systematic Lyapunov-based design." *Journal of Circuits, Systems, and Computers*, 17. 4 (2008): 539-559.
- Zaher, Ashraf A. "Design of fast state observers using a backstepping-like approach with application to synchronization of chaotic systems." *Journal of Chaos*, 18.2 (2008): 023114:1-10.
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- Zaher, Ashraf A. "A nonlinear controller design for PM motors using a synchronization-based technique inspired from the Lorenz System." *Journal of Chaos*, 18.1 (2008): 013111:1-12.
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- Al-Qaisia, A., Harb, A., Zaher, Ashraf A. and Zohdy, M. "Robust Estimation-Based Control of Chaotic Behavior in an Oscillator with Inertial and Elastic Symmetric Nonlinearities." *Journal of Vibration and Control*, 9.6 (2003): 665-684.

b) Conferences:
- Zaher, Ashraf A. and Hussain, G., "STEAM-based Active Learning Approach to Selected Topics in Electrical/Computer Engineering" *EDUCON2020 – IEEE Global Engineering Education Conference, Porto, Portugal* (April 27-30, 2020): 1752-1757.
- Zaher, Ashraf A. and Yousafzai, J., "An Adaptive Control Approach to Securely Transmit Colored Images using Chaos-based Cryptography" *IEEE 62nd Int. Midwest Symposium on Circuits and Systems (MWSCAS'19), Dallas, TX, USA* (August 4-7, 2019): 953-956.
- Zaher, Ashraf A. and Hussain, G., "Chaos-based Cryptography for Transmitting Multimedia Data over Public Channels" *IEEE 7th International Conference on Information and Communication Technology (ICoICT'19), Kuala Lumpur, Malaysia* (July 24-26, 2019): 242-274.
- Hussain, G., Hummes, D., Zaher, Ashraf A., Safdar, M., and Lehtonen, M. "Hybrid Sensing of Partial Discharge Faults in Air Insulated Switchgear" *IEEE 9th International Conference on Environment and Electrical Engineering (EEEIC'19), Genoa, Italy* (June 11-14, 2019): 1782-1787.
- Zaher, Ashraf A., Al-Faqsh, A., Abdulredha, H., Qudaihi, H. and Toaube, M., "Smart Fire Detection/Alarming System (SFDAS)" IEEE 10th GCC Conference, Kuwait (April 21-23, 2019): XXX-XXX.
- Zaher, Ashraf A., Hamwi, H., Almas, A., Al-Baitamouni, S., and Al-Bathal, M., "Automated Smart Solar Irrigation System" *Smart Cities Symposium (SCS'18), Manama, Bahrain* (April 22-23, 2018): 63-68.
- Al-Fadhli, M. and Zaher, Ashraf A. "A Smart SCADA System for Oil Refineries", *The 2nd International Conference on Computing Sciences and Engineering (ICCSE 2018), Kuwait* (March 11-13, 2018): 65-69.
- Zaher, Ashraf A. "Adaptive Estimation-Based Control for Uncertain Processes with Low Order Dynamics." *The 9th IEEE GCC Conference, Manama, Bahrain* (May 8-11, 2017): 1057-1062.
- Zaher, Ashraf A. and Khanafer, M. "A Systematic Approach to Model and Simulate Controlling Industrial Processes with Uncertainties." *The 11th Annual EEE Systems Conf. (SYSCON 2017), Montreal, Quebec, Canada* (April 24-27, 2017): 670-675.

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- Zaher, Ashraf A. "Modeling and Simulation of Hybrid Control Systems with Applications to Nonlinear Processes with Bounded Inputs." *IEEE 17th Int. Conf. on Modeling and Simulation – UKSim-AMSS, Cambridge, UK* (March 25-27, 2015): 229-234.
- Zaher, Ashraf A. "Suppressing Chaos in Uncertain Nonautonomous Oscillators." *IEEE 16th Int. Conf. on Modeling and Simulation – UKSim-AMSS, Cambridge, UK* (March 26-28, 2014): 570-574.
- Zaher, Ashraf A. "An Improved Chaotic Shift Keying Technique." *The 5th ISCCSP Int. Conf. on Communications, Control and Signal Processing, Rome, Italy* (May 2-4, 2012): 1-4.
- Zaher, Ashraf A. "Secure Communications Using Duffing Oscillators." *IEEE ICSIPA, Kuala Lumpur, Malaysia* (November 16-18, 2011): 557-562.
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- Zaher, Ashraf A. and Abu-Rezq, A. "A Hybrid ANN-Based Technique for Signature Verification." *The 4th WSEAS Int. Conf. on Computational Intelligence, Bucharest, Romania* (April 20-22, 2010): 13-19.
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- Zaher, Ashraf A. "A Robust Design for Secure Communication Systems Using Decoupled Parameter Modulation and Synchronization." *The 8th WSEAS Int. Conf. on Signal Processing (SIP09), Istanbul, Turkey* (May 30 – June 1, 2009): 11-17.
- Zaher, Ashraf A. "On the Design of Nonmodel-Based Controllers for the Chaotic Rössler System." *The 2nd IASTED on Modern Nonlinear Theory, Orlando, Florida, USA* (November 16-18, 2008): 333-338.
- Zaher, Ashraf A. "Nonlinear Computer-Based Modeling and Simulation of PMSMs." *The 2nd EMS on Computer Modeling and Simulation, Liverpool, UK* (September 8-10, 2008): 573:577.
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- Zaher, Ashraf A. "A new secure communication technique using a novel chaos-based nonlinear cryptography function." *The 16th EUSIPCO on Signal Processing, Lausanne, Switzerland* (August 25-29, 2008): 1569101246:1-5.
- Zaher, Ashraf A. "Recursive Backstepping for Synchronization of Chaotic Systems." *The 1st INDS on Nonlinear Dynamics and Synchronization, Klagenfurt, Austria* (July 18-19, 2008): 131-136.
- Sabbah, I., Khalil, D. and Zaher, Ashraf A. "Power Spectrum of Cosmic Rays Intensity" *The European Geosciences Union (EGU), Vienna, Austria* (April 13-18, 2008): 669-674.
- Zaher, Ashraf A. and Abu-Rezq, A. "Tuning of notch filters for controlling chaos in a Chua's circuit." *Proc. of IEEE on Signal Processing & Communications, Dubai, UAE* (November 24-27, 2007): 305-308.
- Zaher, Ashraf A. and Zohdy, M. "Computer Modeling and Simulation of DC PM Motors." *The 16th IASTED on Applied Simulation & Modeling, Majorca, Spain* (August 29-31, 2007): 306-311.
- Zaher, Ashraf A., Zohdy, M., Shillor, M. and Abu-Rezq, A. "Stability and control of roll motions of ships." *The 9th IASTED on Control and Applications, Montreal, Quebec, Canada* (May 30 – June 1, 2007): 255-260.

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- Zaher, Ashraf A., Zohdy, M. and Areed, F. "Adaptive feedforward control of processes with parameters uncertainty." *The 46th IEEE MWSCS, Cairo, Egypt* (December. 27-30, 2003): 1034-1038.
- Zaher, Ashraf A. and Zohdy, M. "Convergent Nonlinear Control for Uncertain Process Plants." *Proc. of ACC, Berkeley, CA, USA* (June 4-6, 2003): 5135-5141.
- Zaher, Ashraf A. and Zohdy, M. "Adaptive Nonlinear Control of Biped Walker." *Proc. of the 15th Int. CAINE, San Diego, CA, USA* (Nov. 7-9, 2002): 82-85.
- Harb, A., Zaher, Ashraf A. and Zohdy, M. "Nonlinear Recursive Chaos Control." *Proc. of ACC, Anchorage, AL, USA* (May 8-10, 2002): 2251-2254.
- Zaher Ashraf A. and Zohdy, M. "Hybrid Dynamic Neural Learning (HDNL) in Control Applications." *The 44th IEEE MWSCS, Dayton, Ohio, USA* (August 14-17, 2001): 627-635.
- Zaher, Ashraf A. and Zohdy, M. "Robust Model-Reference Control for a Class of Non-Linear and Piece-Wise Linear Systems." *Proc. of ACC, Arlington, VA, USA* (June 25-27, 2001): 4514-4519.
- Zaher, Ashraf A., Zohdy, M., Areed, F. and Soliman, K. "Real-Time Adaptive Model-Reference Control of Non-Linear Processes." *Proc. of the 2nd Int. ICCI, Manama, Bahrain* (November 13-15, 2000): 35-42.
- Zaher, Ashraf A. and Zohdy, M. "Robust Control of Biped Robots." *Proc. of ACC, Chicago IL, USA* (June 28-30, 2000): 1473-1478.

c) Abstracts
- URC 2020 (April 15-16), HW/SW Codesign Using an Open-Source Authentication Algorithm, Dubai, UAE
- URC 2019 (April 17-18), Design and Implementation of Smart Houses, Dubai, UAE
- URC 2019 (April 17-18), Migration Detection using EMG, Dubai, UAE
- URC 2018 (April 25-26), The Board Mate, Dubai, UAE
- URC 2018 (April 25-26), Smart Fire Detection/Alarming System, Dubai, UAE
- URC 2018 (April 25-26), Smart Solar Irrigation System, Dubai, UAE
- URC 2017 (April 26-27), Smart Oil Refinery, Dubai, UAE

d) Professional Development in Engineering Education
- 2019 ABET Symposium (April 10-13, 2019) – Dallas – TX - USA
- 2018 ABET Symposium (April 13-14, 2018) – San Diego – CA – USA
- 2017 ABET EAC Summer Commission Meeting (July 13, 2017) – Baltimore – MD – USA
- 2017 ABET Symposium (April 20-21, 2017) – Baltimore – MD – USA
- 2016 ABET Workshop: Assessing Student Professional Competencies (April 16, 2016) – Hollywood – FL – USA
- 2016 ABET Workshop: Creating a Culture of Assessment (April 16, 2016) – Hollywood – FL – USA
- 2016 ABET Symposium (April 14-15, 2016) – Hollywood – FL – USA
- 2015 ABET EAC Summer Commission Meeting (July 16, 2015) – Baltimore – MD – USA
- 2015 ABET Workshop: Using project management to create you self-study & prepare for the visit (April 25, 2015) – Atlanta GA- USA
- 2015 ABET Symposium (April 23-24, 2015) – Atlanta– GA – USA

e) Book Chapters
- Process Analysis, Design and Intensification in Microfluidics and Chemical Engineering
  Publisher: IGI Global, USA
  ISBN: 978-1522571384 (2019)
  Chapter Title: Smart Temperature Sensors: History, Current Practices, and Future Trends
- Recent Advances in Signal Processing
  Publisher: I-Tech Education and Publishing, Austria
  ISBN: 978-9533070025 (2009)
  Chapter Title: Using Chaos for Constructing Secure Communication Systems.