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RESEARCH INTERESTS:

Integrating renewable energy in power systems, control in power electronics, dynamic state estimation, electric drives, power system dynamics, and control.

ACADEMIC AND INDUSTRIAL EXPERIENCES:

SEP. 2023-PRESENT	**Professor**, Dept. of Electrical Eng., Jordan University of Science & Technology. Irbid, Jordan
SEP. 2018-SEP. 2023	**Associate Professor**, Dept. of Electrical Eng., Jordan University of Science & Technology. Irbid, Jordan
SEP. 2019-SEP. 2022	**Chairman of the Electrical Engineering Department**, Jordan University of Science & Technology. Irbid, Jordan
SEP. 2018-SEP. 2019	**Manager, Department of Linking with Industry**, The Consultative Center for Science and Technology, Jordan University of Science & Technology. Irbid, Jordan
SEP. 2013- SEP. 2018	**Assistant Professor**, Dept. of Electrical Eng., Jordan University of Science & Technology. Irbid, Jordan
JAN. 2013-SEP. 2013	**Assistant Professor**, Dept. of Electrical & Computer Eng., University of Nizwa. Oman.
APR. 2011-DEC. 2012	**R&D Electrical Engineer**, Fuji Electric Co. Ltd, Power Electronics Technology Development Center, Corporate R&D Headquarters, Tokyo, Japan.
OCT. 2009-MAR. 2011	**Postdoctoral Fellow**, Yokohama National University, Yokohama, Japan.
OCT. 2003- JAN. 2005	**Part-time instructor**, Dept. of Electrical Eng., Jordan University of Science & Technology.
OCT. 2001 – JUNE 2003	**Teaching Assistant**, Dept. of Electrical Eng., Jordan University of Science & Technology.

JUNE 2000-FEB. 2001	**R& D Electrical Engineer**, Jolift, ThyssenKrupp Jolift, Madaba, Jordan.

ACADEMIC QUALIFICATIONS:

SEP. 2009	**Ph.D.,** Electrical and Computer Engineering, Yokohama National University. Yokohama, Japan
JUNE 2003	**M.Sc.,** Electrical Power and Control Engineering, Jordan University of Science & Technology. Irbid, Jordan
JUNE 2000	**B.Sc.,** Electrical Engineering, Al Balqa Applied University, Engineering Technology College. Amman, Jordan

HONORS & AWARDS:

AUG. 2022	IEEJ Industry Applications Society Paper Review Promotion Award
FEB. 2021	IEEE Senior Member award
NOV. 2011	First Prize Paper Award of the IEEE-IES Electrical Machines Technical Committee.
MAY 2008 - SEP.2009	Award for graduate students, Yokohama National University, Global COE program.
APR. 2005- APR 2009	Monbukagakusho scholarship, Ministry of Education, Culture, Sports, and Technology of Japan.
JAN.2001-JUNE 2003	Teaching assistant award, Jordan University of Science and Technology

TECHNICAL PUBLICATIONS:

JOURNAL PAPERS

1. Bany Fawaz, Bayan, and **I. A. Smadi**. "Optimal loop filter design of a DC immunity single-phase PLL based single delay operator." *International Journal of Dynamics and Control* (2024): 1-13.
2. Bany Fawaz, Bayan H., **I. A. Smadi**, Saher A. Albatran, and Ibrahem E. Atawi. "Advanced Single-Phase PLL-Based Transfer Delay Operators: A Comprehensive Review and Optimal Loop Filter Design." *Energies* 17, no. 2 (2024): 419.
3. **I. A. Smadi**, Shehadeh LI. An Improved Reactive Power Sharing in an Isolated Microgrid with a Local Load Detection. *Chinese Journal of Electrical Engineering*. 2023 Jun;9(2):14-26. doi: 10.23919/CJEE.2023.000021

4. **I. A. Smadi**, Atawi IE, Ibrahim AA. An Improved Delayed Signal Cancelation for Three-Phase Grid Synchronization with DC Offset Immunity. *Energies*. 2023 Mar 20;16(6):2873. doi: https://doi.org/10.3390/en16062873.

5. **I. A. Smadi**, Kreashan HA, Atawi IE. Enhancing the filtering capability and the dynamic performance of a third-order phase-locked loop under distorted grid conditions. *Energies*. 2023 Feb 2;16(3):1472. doi: https://doi.org/10.3390/en16031472

6. **I. A. Smadi**, H. Altabbal and B. H. B. Fawaz, "A Phase-Locked Loop With Inherent DC Offset Rejection for Single-Phase Applications," in *IEEE Transactions on Industrial Informatics*, vol. 19, no. 1, pp. 200-209, Jan. 2023, doi: 10.1109/TII.2022.3157631.

7. **I. A. Smadi,** S. A. Albatran, and T. Q. Ababneh, "A synchronization technique for single-phase grid applications," *International Journal of Power Electronics and Drive Systems (IJPEDS)*, vol. 13, no. 4, p. 2181, 2022. Doi: http://doi.org/10.11591/ijpeds.v13.i4.pp2181-2189

8. **I. A. Smadi** and A. AL-Ramaden, "An algorithm to extract the maximum power from the PV-based generation systems under non-uniform weather," *International Journal of Power Electronics and Drive Systems (IJPEDS)*, vol. 13, no. 2, p. 1129, 2022. Doi: http://doi.org/10.11591/ijpeds.v13.i2.pp1129-1139

9. **I. A. Smadi** and B. H. Bany Fawaz, "DC offset rejection in a frequency-fixed second-order generalized integrator-based phase-locked loop for single-phase grid-connected applications," *Protection and Control of Modern Power Systems*, vol. 7, no. 1, 2022. Doi: https://doi.org/10.1186/s41601-021-00223-w

10. **I. A. Smadi** and W. Sultan, "A phase-locked loop with an improved dynamic response under abnormal grid conditions," *Computers & Electrical Engineering*, vol. 97, p. 107645, 2022. Doi: https://doi.org/10.1016/j.compeleceng.2021.107645

11. **I. A. Smadi** and B. H. Bany Fawaz, "Phase-locked loop with DC offset removal for single-phase grid-connected converters," *Electric Power Systems Research*, vol. 194, p. 106980, 2021. doi: 10.1016/j.epsr.2020.106980.

12. **I. A. Smadi** and R. AL-Qudah, "Explicit one-step model and adaptive maximum power point tracking algorithm for a photovoltaic module," *Computers & Electrical Engineering*, vol. 85, p. 106659, 2020. Doi: 10.1016/j.compeleceng.2020.106659.

13. S. Albatran, **I. A. Smadi,** and H. A. Bataineh, "Generalized optimal and explicit pi/PID tuning formulas for underdamped second-order systems," *International Journal of Control, Automation and Systems*, vol. 18, no. 4, pp. 1023–1032, 2019. Doi: https://doi.org/10.1007/s12555-019-0178-2

14. **Smadi I**, Albatran S, Alsyouf M (2019) Power quality improvement of a class of reduced device count inverter. Simulation Modelling Practice and Theory 96:101939. doi: 10.1016/j.simpat.2019.101939

15. **Smadi I**, Albatran S, Alsyouf M (2018) Optimal Control of a Compact Converter in an A.C. Microgrid. Electronics 7:102. doi: 10.3390/electronics7070102.

16. **Smadi I**, Albatran S, Ahmad H (2018) On the Performance Optimization of Two-Level Three-Phase Grid-Feeding Voltage-Source Inverters. Energies 11:400. doi: 10.3390/en11020400.

17. Albatran S, Koran A, **Smadi I**, Ahmad H (2018) Optimal design of passive RC-damped LCL filter for grid-connected voltage source inverters. Electrical Engineering 100:2499-2508. doi: 10.1007/s00202-018-0725-5

18. Smadi I, Albatran S, Alathamneh M, Alomoush M (2018) Security-constrained Economic Dispatch with Linear/Nonlinear Energy Sources during Short-Term Emergency Period. International Journal of Renewable Energy Research (IJRER) 8:1 ,pp129-140.

19. Albatran S, Smadi I, Alsyouf M (2018) Experimental Validation of Shared Inverter Topology to Drive Multi AC-Loads. International Journal of Electrical and Computer Engineering (IJECE) 8:793. doi: 10.11591/ijece.v8i2.pp793-805.

20. Albatran S, Smadi I, Ahmad H, Koran A (2017) Online Optimal Switching Frequency Selection for Grid-Connected Voltage Source Inverters. Electronics 6:110. doi: 10.3390/electronics6040110

21. Smadi I, Omori H, Fujimoto Y (2012) Development, Analysis, and Experimental Realization of a Direct-Drive Helical Motor. IEEE Transactions on Industrial Electronics 59:2208-2216. doi: 10.1109/tie.2011.2148687

22. Harb A, Smadi I (2010) Parallel-Distributed Compensation Fuzzy Controller for Nonlinear Control of a Series Dc Motor. International Journal of Modelling and Simulation 30:371-375. doi: 10.1080/02286203.2010.11442593

23. Smadi I, Fujimoto Y (2009) On Nonlinear Disturbance Observer Based Tracking Control for Euler-Lagrange Systems. Journal of System Design and Dynamics 3:330-343. doi: 10.1299/jsdd.3.330

24. Harb A, Smadi I (2009) Tracking control of D.C. motors via mimo nonlinear fuzzy control. Chaos, Solitons & Fractals 42:702-710. doi: 10.1016/j.chaos.2009.01.037

25. Hayajneh M, Radaideh S, Smadi I (2006) Fuzzy logic controller for overhead cranes. Engineering Computations 23:84-98. doi: 10.1108/02644400610638989

26. Nejdawi I, Radaideh S, Smadi I (2006) Two Fuzzy Adaptive Controllers for Linear Systems with Linear Disturbances. International Journal of Modelling and Simulation 26:323-330. doi: 10.1080/02286203.2006.11442384

27. Radaideh S, Hayajneh M, Smadi I (2004) $PII\sigma FD$ Controller for Linear Invariant Single Input/Single Output Systems. Journal of Electrical Engineering (JEEEC) 55:324-327.

28. Harb A, Smadi I (2004) On Fuzzy Control of Chaotic Systems. Journal of Vibration and Control 10:979-993. doi: 10.1177/1077546304041541

CONFERENCE PAPERS:

1. **I. A. Smadi**, "On $\alpha\beta$ Delay Signal Cancelation Phase-locked Loop for DC-Offset Rejection," 2022 11TH INTERNATIONAL CONFERENCE ON RENEWABLE ENERGY RESEARCH AND APPLICATION (ICRERA), 2022, pp. 67-70, doi: https://doi.org/10.1109/ICRERA55966.2022.9922777

2. **I. A. Smadi** and M. B. Issa, "Phase Locked Loop with DC-Offset Removal for Grid Synchronization," IECON 2019 - 45th Annual Conference of the IEEE Industrial Electronics Society, 2019, pp. 4669-4673, doi: https://doi.org/10.1109/IECON.2019.8926845.

3. S. Alomari and **I. A. Smadi**, "Modeling and Control of Multi-Port DC/DC Converter," 2019 IEEE 28th International Symposium on Industrial Electronics (ISIE), 2019, pp. 920-925, doi: https://doi.org/10.1109/ISIE.2019.8781105.

4. A. AL-Ramaden and **I. A. Smadi**, "Partial Shading Detection and Global MPPT Algorithm for PV System," 2019 IEEE Jordan International Joint Conference on Electrical Engineering and Information Technology (JEEIT), 2019, pp. 135-140, doi: https://doi.org/10.1109/JEEIT.2019.8717442.

5. F. T. Alrashdan and **I. A. Smadi**, "Fuzzy Logic Controller for an Electrolytic Capacitor-less IPMSM Drive System," 2018 7th International Conference on Renewable Energy Research and Applications (ICRERA), 2018, pp. 797-803, doi: https://doi.org/10.1109/ICRERA.2018.8566887.

6. Smadi I, Albatran S, Alsyouf M (2017) A novel compact AC/AC converter for hybrid microgrids. 2017 IEEE 6th International Conference on Renewable Energy Research and Applications (ICRERA). doi: 10.1109/icrera.2017.8191255

7. Albatran S, Smadi I, Alsyouf M (2017) Selective harmonics reduction for 3(n+1) switch inverter using optimal leveling and sorting PWM technique. IECON 2017 - 43rd Annual Conference of the IEEE Industrial Electronics Society. doi: 10.1109/iecon.2017.8216258

8. Jamal H, Albatran S, Smadi I (2016) Optimal design of output L.C. filter and cooling for three-phase voltage-source inverters using teaching-learning-based optimization. 2016 IEEE Energy Conversion Congress and Exposition (ECCE). doi: 10.1109/ecce.2016.7855316

9. Jamal H, Albatran S, Smadi I (2016) Variable switching frequency algorithm for optimal tradeoff between switching losses and total demand distortion in grid-tied three-phase voltage-source inverters. 2016 IEEE Energy Conversion Congress and Exposition (ECCE). doi: 10.1109/ecce.2016.7855551

10. Smadi I, Albatran S (2015) Nonlinear controller-observer design for an inverted pendulum on a cart based on full fuzzy modeling. IECON 2015 - 41st Annual Conference of the IEEE Industrial Electronics Society. doi: 10.1109/iecon.2015.7392565

11. Shimizu K, Smadi I, Fujimoto Y (2014) Examination of a control method for a walking assistance robotics cane. IECON 2014 - 40th Annual Conference of the IEEE Industrial Electronics Society. doi: 10.1109/iecon.2014.7048899

12. Shimizu K, Smadi I, Fujimoto Y (2014) A robotic cane for walking assistance. 2014 International Power Electronics Conference (IPEC-Hiroshima 2014 - ECCE ASIA). doi: 10.1109/ipec.2014.6869857

13. Shukor A, Smadi I, Fujimoto Y (2011) Development of a biarticular manipulator using spiral motors. IECON 2011 - 37th Annual Conference of the IEEE Industrial Electronics Society. doi: 10.1109/iecon.2011.6119294

14. Fujimoto Y, Smadi I, Wakayama Y (2011) Development of musculoskeletal biped robot driven by direct-drive actuators. 2011 IEEE International Conference on Mechatronics. doi: 10.1109/icmech.2011.5971227

15. Smadi I, Omori H, Fujimoto Y (2010) On direct-drive motion of a spiral motor. IECON 2010 - 36th Annual Conference on IEEE Industrial Electronics Society. doi: 10.1109/iecon.2010.5675163

16. Fujimoto Y, Smadi I, Omori H, Suzuki K, Hamada H (2010) Modeling and control of a high-thrust direct-drive spiral motor. The 2010 International Power Electronics Conference - ECCE ASIA -. doi: 10.1109/ipec.2010.5543481

17. Fujimoto Y, Wakayama Y, Omori H, Smadi I (2010) On a high-backdrivable direct-drive actuator for musculoskeletal bipedal robots. 2010 11th IEEE International Workshop on Advanced Motion Control (AMC). doi: 10.1109/amc.2010.5464097

18. Smadi I, Omori H, Fujimoto Y (2010) On independent position/gap control of a spiral motor. 2010 11th IEEE International Workshop on Advanced Motion Control (AMC). doi: 10.1109/amc.2010.5464083

19. Fujimoto Y, Smadi I, Omori H, Wakayama Y (2010) High thrust force direct-drive linear actuator and its application to musculoskeletal robots.Proc. Int. Symp. on Application of Biomechanical Control Systems to Precision Engineering. pp 217-222

20. Smadi I, Fujimoto Y (2007) Three Dimensional Dynamical Modeling of One-Wheel Robot. Proceeding (550) Modelling, Identification, and Control – 2007

BOOK CHAPTER

1. Harb A.M., **Smadi I**. (2006) Chaos Control Using Fuzzy Controllers (Mamdani Model). In: Li Z., Halang W.A., Chen G. (eds) Integration of Fuzzy Logic and Chaos Theory. Studies in Fuzziness and Soft Computing, vol 187. Springer, Berlin, Heidelberg

COURSES TAUGHT:

Advanced Analysis of Electrical Machines, Advanced Electrical Machines, Electric Drive Systems, Power Systems, Renewable energy systems, Switched-mode converters, Special topics in power, Special topics in power and control, Computer Control, Control Systems, Digital Control, Special topics in control, Principle of electrical engineering, Control systems Lab., Instrumentation and control systems lab, Electromechanical system Lab., Power electronics Lab., Microcontrollers and embedded systems lab, Electrical machine Lab., Electrical circuits lab, Seminar, Engineering training, Engineering practice.