

ACHIEVE (J) (N) (D) (W) (D) (7) (H) (O) (J) (L) (R) (V) (A)

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**RESEARCH/NON-RESEARCH PROPOSALS**

1. “Grid Resiliency Forecasting,” DOE/BIRD Foundation/Exacter Inc., \$210,297, J.A. De Abreu-Garcia (PI), Yilmaz Sozer (Co-PI), and Jin Wei Kocsis (Co-PI), October 2018 to October 2020. (Declined.)
2. “Conductor, Cable, and Associated Hardware Condition Assessment,” Exacter Inc., \$25,000, J.A. De Abreu-Garcia (PI) and Yilmaz Sozer (Co-PI), July 2019 to May 2020.
3. “Conductor, Cable, and Associated Hardware Condition Assessment,” Exacter Inc., \$120,000, Yilmaz Sozer (PI) and J.A. De Abreu-Garcia (Co-PI), August 2018 to August 2019.
4. “Active Clamp Sensors for Detecting and Mitigating Low Level DC Fault currents in Transit Systems,” National Academy of Sciences Transit Cooperative Research Program, \$150,000, Yilmaz Sozer (PI), J.A. De Abreu-Garcia (Co-PI), and Ping Yi (Co-PI), January 2019 to August 2020. (Pending – Funding Approved.)
5. “Electric Grid Condition Assessment Through Mobile Sensing Networks Data Analytics,” NSF, \$749,894, J.A. De Abreu-Garcia (PI), Yilmaz Sozer (Co-PI), Jin Wei Kocsis (Co-PI), Michael French (Co-PI), Robert Veillette (Co-PI), John Lauletta (CoPI), September 2018 to September 2021. (Declined.)
6. “Conductor, Cable, and Associated Hardware Condition Assessment,” Exacter Inc., \$58,677 (Phase II), Yilmaz Sozer (PI) and J.A. De Abreu-Garcia (Co-PI), June 2016 to August 2017.
7. “Health Monitoring of Power Networks through Active Clamp Injection,” NSF, \$339,517, Yilmaz Sozer (PI) and J.A. De Abreu-Garcia (Co-PI), June 2015 to May 2018. (Declined.)
8. “Smart Sensors and Sensor System Design, Development, and Commercialization,” Ohio Third Frontier, Innovation Platform Program, \$1,744,192 (plus match \$1,752,705, including \$906,962 from industry), John Lauletta (Exacter Inc.), Jerald Cohen (JACCO & Associates), J.A. De Abreu-Garcia (PI) et al., December 2014 to November 2017.
9. “Smart Sensor Network,” University of Akron Proof of Concept Center (LEAP – Leading Entrepreneurial Academics into Practice), \$30,000 (plus match \$30,000 from industry), Yilmaz Sozer (PI), J.A. De Abreu-Garcia (Co-PI), and John Lauletta (Exacter Inc.). January 2015 to December 2015.
10. “Commercial Unit Dynamometer Testing Plan,” Gearing Solutions, \$ still being negotiated (First test – about \$60K, Subsequent tests – about \$10K-\$15K each), Yilmaz Sozer (PI) and J.A. De Abreu-Garcia (Co-PI), January 2015 to ....
11. “Detecting and Mitigating Low-Level DC Leakage and Fault Currents in Transit Systems,” National Academy of Sciences Transit Cooperative Research Program, \$250,000, Yilmaz Sozer 0 Td(-)72p2f(zer)-2) Jc.Ac. D

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**RESEARCH/NON-RESEARCH PROPOSALS (CONTINUED)**

17. "Developing Load Matching Technology to Improve HVAC and Domestic Hot Water Systems," Ohio Department of Development (ODoD) Research Commercialization Program, ECE requested funding of \$470K (Total request \$2M,



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**RESEARCH/NON-RESEARCH PROPOSALS (CONTINUED)**

47. "Prototyping of a High-Speed Weighing System," with R.J. Veillette and T.T. Hartley, Eveready Battery Company, Inc., \$31,190.74 (\$3,000 in matching funds from the Electrical Engineering Department), 1 September 1994 to 1 June 1995, (Eveready technically accepted and agreed to fund this proposal, but the University and Eveready failed to reach an agreement on intellectual property.)
48. "Advanced Training for Industrial Control Engineers," with R.J. Veillette and T.T. Hartley, The Goodyear Tire & Rubber Company, \$9,900 (matching funds in the amount of \$7,590 were obtained from the Engineering Dean's Office), 1 September 1994 to 1 May 1995.
49. "Planning Grant: Mathematical Sciences and their Applications Throughout the Curriculum," with G.W. Young, NSF, \$50,000, 1 July 1994 to 29 February 1995, (Declined.)
50. "Feasibility Analysis of a Dynamic Weighing System," with R.J. Veillette and T.T. Hartley, Eveready Battery Company, Inc., \$2,000, 1 February 1994 to 1 June 1994.
51. "Training In Control System Design For Industry Application," with R.J. Veillette and T.T. Hartley, Eveready Battery Company, Inc., \$3,024, 14 December 1993 to 16 December 1993.
52. "Advanced Training for Industrial Control Engineers," with T.T. Hartley, The Goodyear Tire & Rubber Company, \$9,900 (matching funds in the amount of \$13,150 were obtained from the Engineering Dean's Office), 2 February 1993 to 28 July 1993.
53. "Advanced Training for Industrial Control Engineers," with T.T. Hartley.2 y C3.006 Tw -1.807 - (e)4.2 (a)-22.8 (1.9 (a)024g

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**RESEARCH/NON-RESEARCH PROPOSALS (CONTINUED)**

62. "Discrete Methods for the Control of Distributed Parameter Systems," with T.T. Hartley, National Science Foundation, March 1988, (Declined.)
63. "Numerical Computation of Reduced Order Models," The University of Akron Research Challenge Grants, December 1987, (Declined.)

**BOOKS, MONOGRAPHS, AND SECTIONS IN BOOKS**

1. R. J. Veillette and J. A. De Abreu Garcia, "Root Locus Method," in *The Industrial Electronics Handbook: Control and Mechatronics*, 2<sup>nd</sup> edition, B. M. Wilamowski and J. D. Irwin, eds., CRC Press, 2011.
2. R.J. Veillette and J.A. De Abreu-García, "Root Locus Method," *The Industrial Electronics Handbook*, Chapter 27, pp. 490-503, CRC Press/IEEE Press, 1997, (Invited book chapter.)
3. A. Mohammad and J.A. De Abreu-García, "Continuous-Time and Discrete-Time Lyapunov Equations: Review and New Directions," *International Series on Advances in Control and Dynamic Systems*, Vol. 74, pp. 253-307, Academic Press Inc., 1996, (Invited book chapter for Special Theme Volumes on "Digital Design & Control systems Techniques and Applications.")
4. J.A. De Abreu-García and T.T. Hartley, "Multistep Matrix Integrators for Real-Time Simulation," *Control and Dynamic Systems*, Vol. 38, pp. 211-271, Academic Press Inc., 1990, (Book chapter.)
5. J.A. De Abreu-García and F.W. Fairman, "Balanced Realization via Permutation Symmetric Jordan Realizations," *Linear Algebra in Signals, Systems, and Control*, pp. 522-534, SIAM, 1988, (Invited book section.)
6. J.A. De Abreu-García, "Balancing Techniques Using Jordan Form Realizations," Ph.D. Dissertation, Queen's University at Kingston, Kingston, Ontario, Canada, September 1986.

**REFEREED JOURNAL PUBLICATIONS** ea2 (B)-5061jEM81 85(an)8 (ciD)-1 ( e.2 (311( b)2.9 (i)2.8 (ear)-2.3 (cf)23.976an)8 (R " )12..

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**REFEREED JOURNAL PUBLICATIONS (CONTINUED)**

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**REFEREED JOURNAL PUBLICATIONS (CONTINUED)**

26. F. Mossayebi, T.T. Hartley, and J.A. De Abreu-García, "A Fundamental Theorem for the Model Reduction of Nonlinear Systems," *Journal of the Franklin Institute*, Vol. 329, No. 1, p. 145, 1992.
27. J.A. De Abreu-García, T.T. Hartley, and F. Mossayebi, "On Matrix Integrators for Real-Time Simulation," *IEEE Transactions on Industrial Electronics*, Vol. IE-37, No. 2, p. 113, 1990.
28. A. Ansary and J.A. De Abreu-García, "Minimization of the Scan Time for Programmable Controllers," *Journal of Science and Technology*, No. 1, p. 19, 1989.
29. J.A. De Abreu-García and F.W. Fairman, "Balanced Realization of Orthogonally Symmetric Transfer Function Matrices," *IEEE Transactions on Circuits and Systems*, Vol. CAS-34, No. 9, p. 997, 1987.
30. J.A. De Abreu-García and F.W. Fairman, "On Using Permutation Symmetric Jordan Realizations to Achieve SISO Balancing," *International Journal of Systems Science*, Vol. 18, p. 441, 1987.
31. J.A. De Abreu-García and F.W. Fairman, "A Note on Cross Gramians for Orthogonally Symmetric Realizations," *IEEE*



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**REFEREED CONFERENCE PUBLICATIONS (CONTINUED)**



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**REFEREED CONFERENCE PUBLICATIONS (CONTINUED)**

41. J.A. De Abreu-García and X. Niu, "Stability Robustness of P-Step Matrix Integrators with Uncertainty in the System Model," Proceedings of the IEEE American Control Conference, Vol. 2, p. 1959, Boston, MA, June 26-28, 1991.
42. S.M. Immel, J.A. De Abreu-García, and S.M. Kline, "Load Control System Design," Proceedings of the IEEE International Conference on Systems Engineering, p. 61, Fairborn, OH, August 1-3, 1991.
43. X. Niu and J.A. De Abreu-García, "Some Discrete-Time Counterparts to Robustness Stability Bounds," Proceedings of the IEEE American Control Conference, Vol. 2, p. 1947, Boston, MA, June 26-28, 1991.
44. X. Lei, J.A. De Abreu-García, and T.T. Hartley, "Modeling and Simulation of a Heat Exchanger," Proceedings of the IEEE International Conference on Systems Engineering, p. 453, Fairborn, OH, August 1-3, 1991.
45. G. Wu and J.A. De Abreu-García, "Balanced Realization from Observability Canonical Forms," Proceedings of the 22nd Annual Pittsburgh Conference on Modeling and Simulation, Vol. 22, Part 4, p. 1746, Pittsburgh, PA, May 2-3, 1991.
46. J.A. De Abreu-García and X. Niu, "Stability Robustness of P-Step Matrix Integrators with Uncertainty in the System Model," Proceedings of the IEEE American Control Conference, Vol. 2, p. 1959, Boston, MA, June 26-28, 1991.

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**REFEREED CONFERENCE PUBLICATIONS (CONTINUED)**

57. R. Lalonde, T.T. Hartley, and J.A. De Abreu-García, "The Determination of Third Order Linear Models from a Seventh Order Nonlinear Jet Engine Model," Proceedings of the IEEE International Conference on Systems Engineering, p. 467, Dayton, OH, August 24-26, 1989.
58. A.D. Sarantopoulos, T.T. Hartley, and J.A. De Abreu-García, "Jury Approximations for Order Reduction of Discrete Linear Time-

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**TECHNICAL REPORTS (CONTINUED)**

3. "Loop Detection," F. Casas and J.A. De Abreu-García, Final Report, The Goodyear Tire and Rubber Company, August 1998.
4. "Bar-Code Detection," F. Casas and J.A. De Abreu-García, Final Report, The Goodyear Tire and Rubber Company, AABDC -2.277tSi(s)5. .181 T45.68 Tmo/3Tc 0 TTW 5.783 0 Td(-38.1 (ar)-2.3 (cf900 Td(-)c5900.005 §1277tSiaTw -1.807 -1.181 Td

**PRESENTATIONS (CONTINUED)**

6. "Functional Analysis and Robust Control: A Necessary Marriage," Functional Analysis Class, Department of Electrical Engineering, August 1990, (Invited presentation.)
7. "Real-Time Simulation: Integration timestep, stability, and accuracy," Department of Biomedical Engineering, University of Akron, April 1990, (Invited presentation.)
8. "Numerical Integration Methods for the Space Shuttle Main Engine Simulation," Advanced Control Technology Branch, NASA Lewis Research Center, February 1990.
9. "Alternate Integration Techniques for the Space Shuttle Main Engine Simulation," presented to the Advanced Control Technology Branch, NASA Lewis Research Center, October 1989.
10. "Model Reduction Techniques in Real-Time Simulation Methods for Propulsion System Dynamics," presented to the Advanced Control Technology Branch, NASA Lewis Research Center, August 1988.
11. "Model Order Reduction: A Novel Approach," University of Akron Electrical Engineering Graduate Student Seminar, October 1987.
12. "Real-Time Simulation Methods for Propulsion System Dynamics," Advanced Control Technology Branch, NASA Lewis Research Center, October 1987.
13. "Balanced Realization of SISO Systems," University of Akron Electrical Engineering Graduate Student Seminar, November 1986.

**GRADUATE/UNDERGRADUATE ADVISING**Ph.D. Dissertations

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|-----------------|---|
| Ansary, Omid    | "A Descriptor Approach to Control System Analysis and Design," 1991.  |
| Lalonde, Rick   | "The Calculation of Reduced Order Linear Models from High Order Nonlinear System Input/Output Data," with T. T. Hartley, 1992.  |
| Mohammad, Ahmad | "Modeling Issues and The Lyapunov Equations in Dynamical Control Systems," 1992.  |
| Niu, Xiaoru     | "Stability Robustness for Linear Discrete-time Systems," 1994.  |
| Wu, Gang        | "Reduced Order Controllers for Nonlinear and Discrete-Time Systems," 1997.  |
| Casas, Fernando | "Automated Titration for Mean Arterial Blood Pressure and Cardiac Output Regulation using a Grey Box Adaptive Control Strategy," with S.R. Rittgers and W.D. Timmons, 1998. |
| Berke, Alan     | "A Technique to Mitigate Pulse Transmission in a Hodgkin-Huxley Model," with T.T. Hartley, 1999.  |
| Cabrera, Luis   | "Real-Time Trajectory Optimization Strategy," 1999.   |
| Pazouki, Elham  | "Fault Detection, Identification and Protection Method for Non-Isolated DC-DC Converters," with Yilmaz Sozer, Fall 2018.  |

Master's Theses

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|-------------|---|
| Ma, Xiaoyan | "Model Order Reduction for Linear and Nonlinear Systems," 1988. |
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**GRADUATE/UNDERGRADUATE ADVISING (CONTINUED)**

- Felfli, George "Critical Analysis of Balancing Techniques," 1989.
- Ruetty, Mark S. "An Expert System Approach to Reduced Order Modeling," 1989.
- Mossayebi, Faramarz "Matrix Integrators for the Real-Time Simulation of Propulsion Systems," with T. T. Hartley and Youngstown State University, 1990.
- Salem, Naser "Design of a Reduced-Order-Of-Accuracy P-Step MSRP Integrator," 1991.
- Abu-Khamseh, Naser "An Improved Expert System Approach to Reduced Order Modeling," 1992.
- Pietras, Edward "Real-Time Control of a Thermal System Using System Build and the AC-100," 1992.
- Bangalore, Umarani "Real Time Control of a Teeter-Totter Using the AC-100 Controller," 1993.
- Wroe, Michael "Analysis, Control, and Design of an Industrial Process with a Take Up Loop," 1995.
- Xu, Bing "Modeling, Analysis, and Design of a Distributed Capacitor," 1995.
- Yerashunas, J. Brad "Lateral and Longitudinal Motion in Moving Webs: A Modern Control Approach," 1996.
- Hartmann, Richard "Design of an Open-Architecture, Real-Time Control System using a Set Point Calculator as a Test Case," 1997.
- Zhao, Jinqiang "System Identification and Tracking Control of a Thunder Actuator System with Hysteresis Compensation," with Gangbing Song, Fall 2003.
- Stitz, Tammy "Convergence of The Singular Value Based Model Order Reduction Algorithm," Fall 200"

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**GRADUATE/UNDERGRADUATE ADVISING (CONTINUED)**

- Evanko, Jeffrey            “Robust Control of a Skiver System,” (in progress - expected completion?)
- Morcos, Assaad            “Design and Development of a Man-Machine-Interface for a Dip Pickup Control System,” (in progress - expected completion?)

**Honors Projects**

- Hill, Brian                “Evaluating The Medical Literature: A Computer-Based Tutorial,” 1996.
- Oppenheimer, Michael    “System Identification and Minimal Realizations,” 1994.
- Yerashunas, J. Brad      “Control System Theory Matlab Toolbox,” 1994.
- Immel, Shaun            “Modeling and Simulation of a Load Control System,” Paper won 1st prize in both Akron and Region 2 IEEE Student Paper Competitions. IEEE Paper publication (1st EE ( )-12.44 (.)1bcBdm17.1 (k)12 (r)13tad



Senior Design Projects (CONTINUED)

“Smart Fan,” by Joshua Blanchard, Jacob Carroll, Peter Gross, and Joshua Riegel, 2016-2017.

“Concussion Research Headband,” by Xavier Cabrera, Benjamin Hall, Timothy Mackley, and William Martin, 2016-2017 (Co-Advised with Dr. Michael French).

“Self-Tightening Shoe,” by Tyler Arnold, Andrew Borsi, Ryan Malov, Jon Stoddard, 2017-2018 (3<sup>rd</sup> Place ECE Project Design Award).

“Self-Balancing Robot - Omnibot,” by Ala'alddin Al-migdad, Willi'a Hardy, Daniel Ramnytz, Alex Tobin, 2018-2019.

**GRADUATE/UNDERGRADUATE TEACHING**

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Senior Design Project I (Revised)  
Senior Design Project II (Revised)

4400/4450:401 Fall 2014  
4400/4450:402 Spring 2015



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Founder and chair of the University of Akron Hispanic Steering Council (HSC) (The HSC mission is “To identify, prioritize, and facilitate the Implementation of Hispanic initiatives that would benefit both, The University of Akron and its Hispanic Community. HSC charges include (1) To update current priorities and determine future initiatives, (2) To maintain and support subcommittee work for Hispanic initiatives, (3) To monitor proposals and evaluate all activities, (4) To secure institutional funding for Council activities (5) To insrmth10.4 (ge 0 Td[U]-6.9 (ni)-5.1 (ve)-7.8 3ge)-7.8 (s)-2.5 (i)-5.1 (t)-5.1 (y)2.1 (n a)-7nd

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