

**WESLEY G. ZANARDELLI**

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- OBJECTIVE** A research and development position in electrical engineering with emphasis in electric machines and drives.
- EDUCATION**
- Ph.D., Electrical Engineering** Nov. 2005  
Michigan State University, East Lansing, MI  
Research Topic: *Intermittent Fault Identification in PMAC Drives*
- M.S., Electrical Engineering** Dec. 2000  
Michigan State University, East Lansing, MI
- B.S., Electrical Engineering** May 1999  
Additional Major: Computer Engineering  
Michigan State University, East Lansing, MI
- EXPERIENCE**
- Hybrid Electric Research Group** Jul. 2007 to Present  
**US Army TARDEC, Warren, MI**  
*Electrical Engineer*
- Technical support for programs related to military hybrid electric vehicles and their subsystems, including motors, generators, power electronic systems, and discrete electronic components
  - Determine the capability of electric drive components used in hybrid vehicle applications using finite element and analytical modeling methods
  - Analysis of acquired vehicle data to determine vehicle performance characteristics
  - Evaluate feasibility and make recommendations on proposals for new technologies
- Advanced Electrical Group** Jan. 2001 to Aug. 2002,  
**Delphi Steering, Saginaw, MI** Aug. 2005 to Jul. 2007  
*Electrical Systems Engineer*
- Responsible for aspects of program management, including contract management with build-to-print suppliers, and electrical design for prototype electric power steering controllers
  - Investigation of control strategies for PMAC drives based on a reduced number of sensors
  - Electrical integration and testing of hardware for data acquisition and control of steer-by-wire and active front steering systems
- Electrical Machines and Drives Laboratory** Mar. 1998 to Dec. 2000,  
**Michigan State University, East Lansing, MI** Aug. 2002 to Nov. 2005  
*Graduate Research Assistant*
- Developed methods to identify intermittent electrical and mechanical faults in electric drives based on wavelet and Fourier analysis
  - Designed hardware and software for data acquisition and motor control using Real-Time Linux
- Advanced Technology Vehicles** Summer 1997  
**General Motors Corporation, Milford, MI**  
*Electrical Engineering Intern*
- Worked on development of an instrumented electric vehicle to quantify losses in its electrical and mechanical subsystems
  - Created spreadsheet macros to generate high-level test summaries from raw vehicle data

**Department of Mathematics**  
**Michigan State University, East Lansing, MI**  
**Teaching Assistant / Tutor / Grader**

Aug. 1996 to  
Dec. 1997

- Taught recitation sections for college algebra course
- Departmental tutoring in 100 and 200 level math courses

**Kelsey-Hayes, Romulus, MI**  
**Engineering Intern**

Summer 1996

- Performed testing on anti-lock brake valves and wrote reports summarizing results

## **PUBLICATIONS**

S. S. H. Zaidi, W. G. Zanardelli, S. Aviyente, and E. G. Strangas, "Comparative Study of Time-Frequency Methods for the Detection and Categorization of Intermittent Faults in Electrical Drives," *IEEE International Symposium on Diagnostics for Electrical Machines, Power Electronics and Drives*, Sep. 2007.

W. G. Zanardelli, E. G. Strangas, and S. Aviyente, "Identification of Intermittent Electrical and Mechanical Faults in Permanent-Magnet AC Drives Based on Time-Frequency Analysis," *IEEE Transactions on Industry Applications*, pp. 971-980, Jul.-Aug. 2007.

W. G. Zanardelli, "Methods to Identify Intermittent Electrical and Mechanical Faults in Permanent Magnet AC Drives Based on Time-Frequency Analysis," Ph.D. Dissertation, Michigan State University, 2005.

W. G. Zanardelli, E. G. Strangas, and S. Aviyente, "Intermittent Fault Identification for Permanent Magnet AC Drives Based on the Short-Time Fourier Transform," *IEEE International Symposium on Diagnostics for Electrical Machines, Power Electronics and Drives*, pp. 3-8, Sep. 2005 (Plenary).

W. G. Zanardelli and E. G. Strangas, "Methods to Identify Intermittent Electrical and Mechanical Faults in Permanent Magnet AC Drives Based on Wavelet Analysis," *IEEE Vehicle Power and Propulsion Conference*, pp. 154-160, Sep. 2005.

W. G. Zanardelli, E. G. Strangas, and S. Aviyente, "Failure Prognosis for Permanent Magnet AC Drives Based on Wavelet Analysis," *International Electric Machines and Drives Conference*, pp. 64-70, May 2005.

W. G. Zanardelli, E. G. Strangas, H. K. Khalil, and J. M. Miller, "Wavelet-Based Methods for the Prognosis of Mechanical and Electrical Failures in Electric Motors," *Mechanical Systems and Signal Processing*, pp. 411-426, Mar. 2005.

W. G. Zanardelli and E. G. Strangas, "Failure Prognosis for Permanent Magnet AC Machines Based on Time-Frequency Analysis," *International Conference on Electrical Machines*, Sep. 2004.

W. G. Zanardelli, E. G. Strangas, H. K. Khalil, and J. M. Miller, "Comparison of Wavelet-Based Methods for the Prognosis of Failures in Electric Motors," *IEEE Workshop on Power Electronics in Transportation*, pp. 61-67, Oct. 2002.

W. G. Zanardelli, E. G. Strangas, H. K. Khalil, and J. M. Miller, "The Use of Wavelet Analysis for the Prognosis of Failures in Electric Motors," *IEEE International Symposium on Diagnostics for Electrical Machines, Power Electronics and Drives*, pp. 591-596, Sep. 2001.

W. G. Zanardelli, "The Use of Wavelet Analysis for the Prognosis of Failures in Electric Motors," M.S. Thesis, Michigan State University, 2000.

**RELEVANT COURSEWORK** AC Electrical Machines and Drives, Advanced Machine Drives, Advanced Power Electronics and Applications, Time-Frequency and Wavelet Analysis, Linear Control Systems, Optimal Multivariable Control, Nonlinear Systems Analysis, Detection & Estimation Theory, Robotics

**COMPUTER KNOWLEDGE** Real-Time Linux, TI TMS320C28x DSP, C/C++, MATLAB, Mathematica, Ansoft Maxwell, Magsoft Flux, LabVIEW, Orcad Capture, PSpice, and Layout, LaTeX

**REFERENCES** Furnished upon request