

Wael A. Deabes

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OBJECTIVE

Seeking a challenging position in Electrical Engineering where I can demonstrate outstanding skills, knowledge and attributes to meet organizational as well as individual goals.

EDUCATION

- **Tennessee Technological University** (Aug. 2005-Present)
Ph.D. in Electrical Engineering: (GPA 4.0/4.0)
Expected Graduation date: December, 2008
Emphasis: Control, Instrumentation, and Sensor Fusion
Research topic: **"Intelligent Sensor Fusion System for Monitoring and Control the Lost Foam Casting Process"**
- **Mansoura University, Egypt** (Aug. 1999 -Jan. 2003)
 - **M.sc. Degree in Control Engineering:** (GPA 4.0/4.0)
Research topic: **"Fuzzy Adaptive Control through Sliding Motion Phenomena"**
 - **B.sc. in Electrical Engineering:** (GPA 3.8/4.0) (Aug. 1995 -June 1999)
Major in Computer Engineering and Automatic Control Systems.
Graduation Project: "Distributed Computer Control System for Industrial Automation."
Project Grade: Excellent.

WORK & PROJECTS EXPERIENCE

- **Center for Manufacturing Research, TTU** (Aug. 2005-Present)
Research Assistant (Funded by Department of Energy (DOE) and General Motors Co.)
 - Design intelligent control system for the counter gravity machine used in the counter gravity casting processes.
 - Design a comprehensive system for detecting the foam surface defects using the LabVIEW images processing toolbox to estimate lost foam patterns quality.
 - Development of a tomography sensor to monitor the characteristic of the molten metal inside the foam pattern in the lost foam casting process using sensors fusion techniques and finite element analysis (ANSYS).
 - Development instrumentation for use with online measurements in the foundry for characterization of sand molds using a capacitive based device, LabVIEW interfacing with GPIB control, and Neural Network data processing.
 - Analysis of the data from metal fill sensors to measure the metal fill time using LabVIEW signal processing toolbox.
 - Development of a wireless capacitance sensor using embedded FPGA system to measure and display the images of the motion of the molten metal during the casting process, tools used: Altera board, SOPC Builder, NIOS II Processor, Quartus II software.
 - Assist and guide REU students in summer research 2006, 2007& 2008
 1. Modeling of the counter gravity vacuum machine
 2. Developing a new intelligent controller for the vacuum machine
 3. Wireless communication between capacitance sensors and computer
 4. Design a high frequency capacitance measuring circuit for the ECT systems
 5. Implementation of the ECT using FPGA techniques
- **Computer & Systems Department, Mansoura University, Egypt** (June 1999-Aug. 2005)
Research and Teaching Assistant
 - Development of a distributed computer control system for industrial automation: A comprehensive real-time control system using different controller environments such as PLC, microchip microcontroller and PC is designed to simulate the mixing process used in the chemical industry. I have used C under UNIX OS, Ladder, Embedded C and PLC, PIC Microcontroller hardware .
 - Implemented Fuzzy Sliding Motion Adaptive Control on a DC motor and two-degree-of-freedom robotic manipulator (MatLAB/Simulink)
 - Research, consultancy and designer for the microcontroller and Programmable Logic Controllers (PLC) systems.
 - Study the effect of fuzzy tuning technique on Sliding mode control to enhance robustness and sliding performance in a class of non-linear control systems.
 - Implementation of Fuzzy Adaptive Control through sliding motion phenomena on DC motor and two-degree-of-freedom robotic manipulator
 - Study an optimal control by using Artificial Neural Networks.
 - Development of optimal and adaptive control for Robotic Kinematics, Dynamics systems.

Courses taught:

1. Automatic Control Engineering (4 semesters)
2. Digital Control Engineering (4 semesters)
3. Integrated Circuits (1 semesters)
4. Concepts of Digital Design (4 semesters)
5. Microprocessors and Systems (2 semesters)
6. State Space Analysis (4 semesters)
7. Phase Plane Analysis (1 semesters)
8. Programmable logic controllers (PLC) and sequential control(3 semesters)
9. Operating Systems Design and Concepts (2 semesters)
10. C++ Language & C Language under Operating System UNIX (2 semesters)

PUBLICATIONS

1st Author

1. Deabes, W. A. Abdelrahman, M. A., "A Quantitative Method for Characterization of Surface Properties of Lost Foam Patterns", AFS Trans. vol. 115, pp. 939-948, 2007.
2. Deabes, W. A. Abdelrahman, M. A., "Electrical Capacitive Tomography Sensor for Estimating Metal Fill Profile in Lost Foam Casting", AFS Trans., CastExpo 2008
3. Deabes, W.A.; Abdelrahman, M.A., "An Image Processing Approach for Surface Characterization of the Foam Patterns, Thirty-Ninth Southeastern Symposium on System Theory, 4-6 March 2007.
4. Deabes, W.A.; Abdelrahman, M.A.; Whitman, E.C.; Davis, M., "Design and Implementation of a Control System for a Counter Gravity Casting Machine", Thirty-Ninth Southeastern Symposium on System Theory, 4-6 March 2007.
5. Deabes, W. A. Abdelrahman, and P. K. Rajan "A Fuzzy-Based Reconstruction Algorithm for Estimating Metal Fill Profile in Lost Foam Casting", American Control Conference 2008, June 11-13, 2008 Seattle, Washington, USA
6. Deabes, W. A., Abdelrahman, M., "An Iterative Reconstruction Algorithm for Electrical Capacitive Tomography Using Fuzzy System" The 12th World Multi-Conference on Systemics, Cybernetics and Informatics: WMSCI, June 29th - July 2nd, 2008 – Orlando, Florida, USA
7. Deabes, W. A. Abdelrahman, M., "Metal Fill Profile Detection in Lost Foam Casting Process Using Capacitive Sensors", (April 3-6 IEEE SoutheastCon 2008, Huntsville, Alabama)
8. W. A. Deabes, M. A. Abdelrahman, Conard F. Murray, P. K., and Justin L. Russell, "A Wide Frequency Range Circuit for Measuring Mutual Capacitance with Application to Monitoring of Metal Fill Profile", (April 3-6 IEEE SoutheastCon 2008, Huntsville, Alabama)
9. Analysis Design and Application of a Capacitance Measurement Circuit with Wide Operating Frequency Range(IEEE Multi-conference on Systems and Control, September 3-5, 2008, San Antonio, Texas (USA)

Co Author

10. "An Impedance Measurement Device for Non-Destructive Greensand Mold Inspection", AFS Trans., CastExpo '08
11. Patil, D. Abdelrahman, M. Deabes, W.A. Rajan, P.K., "Characterization of Capacitive Sensors and Monitoring of Metal Fill in Lost Foam Casting", Thirty-Ninth Southeastern Symposium on System Theory, 4-6 March 2007.
12. A. M. Khader, M. A. Abdelrahman, Charles C. Carnal, and W. A. Deabes, "Modeling and Control of a Counter-Gravity Casting Machine" American Control Conference 2008, June 11-13, 2008 Seattle, Washington, USA
13. Phaneeth K. R. Junga, M. Abdelrahman, C. Thurmer, W. A. Deabes, "Reliable Metal-fill Monitoring System using Wireless Sensor Networks", (5th International Conference on Information Technology: New Generations, ITNG 2008, April 7-9, 2008, Las Vegas, Nevada, USA
14. Phaneeth K. R. Junga, M. Abdelrahman, C. Thurmer, W. A. Deabes, "Algorithms for Reliable Data Transmission for Metal Fill Monitoring Using Wireless Sensor Networks", (April 3-6 IEEE SoutheastCon 2008, Huntsville, Alabama

TRAINING EXPERIENCE

- **Agiba Petroleum Co. (Egypt):** training on Distributed Computer Control & PLC systems (*Summer 97*)
- **GUPCO (Gulf of Suez Petroleum co. Egypt)** Oil Plant (*Summer 98*)

COMPUTER SKILLS

- **LabVIEW Software:** Professional.
- **Programming Languages:** MatLAB/SIMULINK, ANSYS, Maxwell, PLC Ladder Logic (RSLogix), C/C++, and Visual Basic.
- **Others:** Verilog, PSpice, LT-Spice, Multisim, SQL, Microsoft Office (Word, Excel, PowerPoint, & Visio), and Latex.

ACTIVITIES/ HONORS

- Member American Foundry Society (AFS).
- Member of the Institute of Electrical and Electronics Engineers (IEEE).
- Distinguished student excellence prize in every year of the five years of the B.S. Study.
- Attended and presented fourteen papers at International conferences in Electrical/Power Engineering.

REFERENCES : Available on request.