MAGDY HELAL, Ph.D.

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BIO

Magdy Helal is an assistant professor of industrial engineering at Benha Faculty of Engineering and the American University of the Middle East in Kuwait. Dr Helal received his Ph.D. in Industrial Engineering (manufacturing systems simulation modeling) in 2008 from the University of Central Florida; USA (He was awarded the prestigious Robert Kristin Fellowship for 2001-2003). Dr Helal holds a Certificate of Quality Assurance from the same university, and M.Sc. in Mechanical Engineering (Production Planning and Control) and B.Sc. in Mechanical Engineering (Manufacturing Engineering) from Benha University in Egypt. In addition to almost 20 years of teaching and academic experiences In Egypt, USA, Saudi Arabia, and Kuwait, Dr Helal has accumulated broad practical experiences and developed solid sets of skills in data analysis, modeling, and performance assessment; developing and applying quantitative mathematical models (TQM-based, operational research, and simulation) of industrial, service, and educational systems.

EDUCATION

- Ph.D., Industrial Engineering and Management Systems Dept., University of Central Florida, Orlando FL. Summer 2008. Dissertation: Hybrid system dynamics-discrete event simulation approach to simulating the manufacturing enterprise.
- Graduate Certificate of Quality Assurance: Industrial Engineering and Management Systems Dept., University of Central Florida, Orlando FL. Summer 2003.
- M.Sc., Mechanical Engineering Department, Benha Faculty of Engineering; Benha University, Egypt. September 1999. Thesis: Investigating group production scheduling models in the flow-line manufacturing cell
- B.Sc., Mechanical Engineering Department, Benha Faculty of Engineering; Benha University, Egypt. May 1993 (with Honor). Graduation project topic: Vibrations of the turning machines

ACADEMIC & PROFESSIONAL EXPERIENCES

ACADEMIC

- **Sept 2013 – Present**: Assistant Professor of Industrial Engineering. The American University of the Middle East, Kuwait
- **Sept 2012 – June 2013**: Assistant Professor: Industrial Engineering Dept., Jazan University, Saudi Arabia
- **Feb 2009 – Jun 2012**: Assistant Professor: Industrial & Systems Engineering Dept., October University for Modern Sciences and Arts (MSA University), Egypt

- **Sept 2008 – Present**: Assistant Professor: Mechanical Engineering Dept., Benha Faculty of Engineering, Benha University, Egypt
- **Spring 2002 and Fall 2007**: Instructor: Industrial Engineering and Management Systems Dept., University of Central Florida, Orlando FL, USA
- **Aug 2001 – Apr 2004**: Graduate Research/Teaching Assistant: Industrial Engineering and Management Systems Dept., University of Central Florida, Orlando FL, USA
- **Oct 1994 – Aug 2001**: Graduate Research/Teaching Assistant: Mechanical Engineering Department, Benha Higher Institute of Technology (currently Benha Faculty of Engineering) – Egypt

PROFESSIONAL

- **Oct 2011 – Sept 2012**: Performance Assessment Consultant, The Egyptian Technical Colleges Project; The Ministry of Higher Education, Egypt
- **Feb – Dec 2009**: Process Re-Engineering Consultant: Hosni Consultant Engineers. Triumph square, Cairo, Egypt
- **Apr 2004 – July 2008:** System Analyst: The Office of University Analysis and Planning Support, University of Central Florida, Orlando FL, USA
- **Jan –Dec 2000**: Process Re-Engineering Analyst: Systems & Technology, Engineering Consultants, Giza, Egypt
- **Oct 1998 – Dec 1999:** Fire Fighting Systems Analyst: Genena Ltd.; Fire Fighting Engineering, Giza, Egypt
- **July – Aug 1998**: Visiting Plant Engineer: Zagrebacka Pivovara d.d.- Interbrew, Zagreb, Republic of Croatia

RESEARCH INTERESTS & PUPLICATIONS

Current Research Interests

My current research works focus on the developing integrated sets of decision support tools utilizing the TQM-based, operational research, simulation modeling techniques, lean philosophy, with considerations of the dynamic factor in performance assessment and enhancements. Target areas of application include manufacturing supply chains, the lean enterprise system, and implementations of the TQM philosophy.

Refereed Journal Papers:

- Rabelo, L., Sarmiento, A., **Helal**, M., Jones, A. 2014. Supply chain and hybrid simulation in the hierarchical enterprise. *International Journal of Computer Integrated Manufacturing*, (DOI:10.1080/0951192X.2014.880807 – Online Feb 2014): 1 – 13
- Rabelo, L., **Helal,** M., Lertpattarapong, C., Moraga, R., Sarmiento, A. 2008. Using system dynamics, neural nets, and eigenvalues to analyse supply chain behaviour - A case study. *International Journal of Production Research*, (46) 1: 51 – 71.

- Rabelo, L., Eskandari, H., Shaalan, T., **Helal**, M. 2007. Value chain analysis using hybrid simulation and AHP. *International Journal of Production Economics*, (105): 536-547.
- **Helal**, M., Rabadi, G., Al-Salem, A. 2006. Tabu search algorithm for the unrelated parallel machines scheduling problem with setup times. *International Journal of Operations Research*, (3) 3: 1-11
- Rabelo, L., **Helal**, M., Dawson, J., Moraga, R. 2006. Detecting and analyzing patterns in supply chain behavior. *International journal of simulation and process modeling*, (2)3/4: 198-209
- Rabelo, L., **Helal**, M., Jones, A., Min, H. 2005. Enterprise simulation: A hybrid system approach. *International Journal of Computer Integrated Manufacturing*, (18) 6: 498-508

Conference Papers and Presentations

- Seleem, S. N., **Helal, M.**, Elassal, A. M., 2014, Using Computer Simulation in Lean Manufacturing Implementation, 16th Intl. Conf. on Applied Mechanics & Mechanical Engineering: AMME-16. May 27th – 29th, Cairo, Egypt
- Abdel-Aziz, I. H., **Helal, M**. 2012. Application of FMEA-FTA in Reliability Centered Maintenance Planning, 15th Intl. Conf. on Applied Mechanics & Mechanical Engineering: AMME-15. May 29th – 31st, pp. 72 – 82, Cairo, Egypt
- Pastrana, J., Marin, M., Rabelo-Mendizabal, L., **Helal, M**. 2010. Enterprise Scheduling: Hybrid, Feedback, and Hierarchical issues. Winter Simulation Conference ; WSC'10 Dec 5 – 8, Baltimore MD
- **Helal,** M.**,** Archer, S., Armacost, R. 2008. Creative solutions for analyzing faculty and administrator salaries. Florida Association for Institutional Research; FAIR Conference, Feb 6-8, Indialantic, FL
- **Helal**, M., Archer, S. 2008. Introduction to VBA in MS Excel. Florida Association for Institutional Research; FAIR Conference, Feb 6-8, Indialantic, FL
- Archer, S., **Helal**, M., Sehrish, S., Armacost, R. 2007. Technology solutions to support program of study planning and class scheduling. Southern Association of Intuitional Research Conference; SAIR, Oct 7-9, Little Rock, AR
- **Helal**, M., Rabelo, L., Sepulveda, J., Jones, A. 2007. A methodology for integrating and synchronizing the system dynamics and discrete event simulation paradigms. Proceedings of the 2007 International Conference of the System Dynamics Society, July 29 – Aug 2, Massachusetts, MA.
- **Helal**, M., Jones, A., Rabelo, L. 2007. Hybrid system dynamics-discrete event simulation approach to simulating the manufacturing enterprise. INFORMS International Conference: Puerto Rico 2007, July 8-11
- **Helal**, M., Rabelo, L., Jones, A. 2006. Using hybrid SD-DES for the simulation of the manufacturing enterprise. The French-US Workshop on ICT and Standards for Supply Chains and PLM. Nov 6-7; NIST, Gaithersburg, MD
- **Helal**, M., Rabelo, L. 2006. Interactions of the three management levels in the manufacturing enterprise system using hybrid simulation. IERC 06; The IIE Annual Research Conference, May 20-24 Orlando, FL
- **Helal**, M., Armacost, R. 2006. Integer programming based Spreadsheet model for generating Feasible student class schedules. The 12th Int'l conference on Industry, Engineering, and Management Systems, March 13-15, Cocoa Beach, FL.
- **Helal**, M., Armacost, R., Adams, D. 2005. Spreadsheet model approaches for university class schedules. Southern Association of Intuitional Research Conference; SAIR, Oct 22-25, Charleston, SC.

- Rabelo, L. Eskandari, H., Shaalan, T., **Helal**, M. 2005. Supporting simulation-based decision making with the use of AHP analysis. Winter Simulation Conference, WSC'05, December 4-7, Orlando, FL.
- Rabelo, L., **Helal**, M., Sepulveda, J. 2005. Pattern recognition in supply chain management. in Liu, Y., Chen, G., Ying, M. (Eds.): Fuzzy Logic, Soft computing, and Computational Intelligence, pp 1961-1735, Springer, Tsinghua University Press, Beijing, China
- Rabelo, L., **Helal**, M., Eskandari, H., Shaalan, T. 2005. Enterprise simulation using system dynamics and discrete-event simulation models. Proceedings of the IEEE SOLI; 2005 IEEE Int'l Conference on Service Operations, Logistics, and Informatics, Beijing, China, Aug 10-12, 2005.
- Rabelo, L., **Helal**, M., Lertpattarapong, C. 2004. An analysis of the supply chains using system dynamics, neural nets and eigenvalues. The Winter Simulation Conference, WSC'04, Dec 5-8, Washington DC
- **Helal**, M., Rabelo, L. 2004. An enterprise simulation approach to the development of dynamic balanced scorecards. ASEM'04; Proceeding of 2004 American Society of Engineering Management Conference, October 20-23, Alexandria, Virginia
- Rabelo, L., **Helal**, M., Lertpattarapong, C. 2004. Detecting changes and avoiding unwanted behavior in supply chains. PICMET'04 Symposium ; Portland International Center for Management of Engineering and Technology, July 31 - August. 4, 2004, Seoul, Korea
- **Helal**, M., Rabelo, L. 2004. Investigating group-scheduling heuristics in the context of the two-phase nature of the model in a flow cell. IERC 04, The IIE Annual Conf., May 15-17 Houston, TX
- **Helal**, M., Rabelo, L., Jones, A. 2004. A study of the impact of production scheduling using enterprise simulation. IERC 04, The IIE Annual Conference;, May 15-17 Houston, TX
- Rabelo, L, **Helal**, M., Son, Y., Jones, A., Min, J., Deshmukh, A. 2003. A hybrid approach to manufacturing enterprise simulation. Winter Simulation Conference, WSC'03, December 7-10, New Orleans, LA
- **Helal**, M., Hosni, Y. 2003. A tabu search approach to the non-identical parallel machines scheduling problem with sequence dependent setup times. IERC 03, The IIE Annual Conference, May 18-20, Portland, OR
- Huzayyin, A., Badr, M., **Helal, M.** 2000. An investigation of the group scheduling heuristics in a flow-line cell. Current Advances in Mechanical Design & Production; 7th Cairo University International MDP Conference, February 12-15, Cairo, Egypt.

TEACHING EXPERIENCES

Teaching is the ultimate learning experience. I have had the opportunity to teach a wide range of engineering courses for students in different countries, and I have come to realize the value of having my students locate the topics that we study within a larger framework of knowledge. So, not only I work to transmit to them my enthusiasm and views about engineering but I believe and I try to have them accept that we all contribute to the bigger structure that we live in, through understanding how theory, analyses, and designs work together to produce a functional system. This has always driven me to emphasize a holistic view of the engineering knowledge, which keeps changing rapidly as the time goes by. I work to make it clear to the students that (1) engineering is a satisfying and exciting profession, (2) along with that are ethical and technical responsibilities that must be fully appreciated, and (3) a lifelong learning is important in order to remain a successful and competitive engineer.

Courses developed and taught

- Undergraduate Courses
    - Lean Operations Design, Current Topics of IE, Engineering Cost Estimating, Productivity and Work Systems, Engineering Economic Analysis, Quality Management and Assurance, Quality Control, Production and Operations Management, Supply Chain Management, Operations Research, Discrete Event Simulation, Project Management, Manufacturing Information systems, Computer-Aided Manufacturing, Principles of Manufacturing, Computer Applications (MS Excel VBA Programming, AutoCAD 2D & 3D), Probability and Statistics, Modeling and Simulation, Production Engineering, Inventory Management and Material Handling, Introduction to Industrial Engineering, Writing Technical Reports
- Graduate Courses
    - Quality Control, Operations Research, Production Management, Engineering Systems Simulation, Total Quality Management

COMPUTER SKILLS

- Modeling and Simulation: Discrete, Continuous, and Agent-based simulation software package: Arena, Vensim, and AnyLogic, in addition to long experience in developing spreadsheet models (for optimization and other data management applications)
- Programming Languages: Visual Basic and Visual Basic for Applications (VBA) for MS Excel, MS Access, Arena, and Vensim simulation packages, besides familiarity with the C language and MatLab
- Statistical Analysis: SAS and SAS macro language, SAS EG, Minitab, and using MS Excel in statistics
- Database management: MS Access usage and programming, and SAS EG
- CAD systems: 2D and 3D modeling in AutoCAD
- Productivity and other software: office applications, flow charting using MS Visio, MathCAD, websites developing using MS FrontPage and Macromedia Dreamweaver Studio, photo editing, and others with good proficiency and productivity.

OTHER ACTIVITIES AND MEMBERSHIPS

- Member of the Technology and Creativity in Teaching and Learning- May 2015 – Present, American University of the Middle East - Kuwait
- Board member, Benha Faculty of Engineering, Feb 2011 – January 2012
- Board member and executive secretary, Department of Mechanical Engineering, Benha Faculty of Engineering, Feb 2009 – April 2012
- Member; post-graduate studies board, Benha Faculty of Engineering, 2009 – 2010
- Benha University Web-Portal Development team: 2009 - 2010
- Paper Review Committee Member: 2004 – Present - The International Conference of the System Dynamics Society http://www.systemdynamics.org/
- Member: Egyptian Syndicate of Engineers, 1994 – Present