Ahmad Al-Muhtady

P.O.Box 838
Amman, Jordan, 11953
Phone: +962-6- 4294444
Email: almuhtad@umich.edu

Education:

- **PhD in Mechanical Engineering,** University of Michigan in Ann Arbor. (June 2013) [**GPA 8.1/9.0**]
  Thesis Topic: Degradation-Based Swapping Optimization Policy for Fleet-Level Management. Research Group: Center for Intelligent Maintenance Systems **http://www.imscenter.net.**
- **MSE in Mechanical Engineering**, University of Michigan in Ann Arbor. (June 2009) [**GPA 8.0/9.0**]
  Research Topic: HVAC (Heating, Ventilation and Air-Conditioning) Equipment Partial Loading and Prognostics. Research Group: Center for Intelligent Maintenance Systems
- **BSE in Mechanical Engineering**, (June,2006),University of Jordan, Amman, Jordan **[GPA 3.71 (rank: 1 (top student of class 2006]**
  - ✓ Graduation project: Experimental Investigation of Natural Convection from Helicoidally Coiled Tubes as Part of HVAC Applications (Funded by the university, Graded A)

Research Interests:

- **Mechanical Engineering Fields: Thermal Sciences, HVAC, Energy Efficient Systems**
- **Industrial Engineering Fields: Optimization, Maintenance Management, Fleet-level Management, Decision Support Tools for Deterministic and Stochastic Systems, Dynamic Programming**

Experience:

- **German Jordanian University/ (July 2013- Present Time) /Position: Assistant Professor of the Mechanical and Maintenance Engineering Departmen**t.

- **University of Michigan/ (January 2008-May 2013) /Position: Research Assistant of the S.M. Wu Manufacturing Research Center and part of the IMS (Intelligent Maintenance System) Research Center Team.**
  Research Topics:
  - For Master: HVAC (Heating, Ventilation and Air-Conditioning) Equipment Partial Loading and Prognostics.
  - For PhD: Degradation-based Optimal Swapping Policy. A resource allocation policy based on tracking health states of degradable components to achieve maximum utilization. Applications include: Maintenance optimal management of a fleet of electric or hybrid electric vehicles, Manufacturing, and Human Resources.

- Other PhD Research topics:
  - Valve Regulated Lead Acid (VRLA) batteries Prognosis and Health Management (PHM) in Uninterruptible Power Supplies (UPS).
  - Environmentally-friendly Solutions for Idling Long-Haul Trucks.
  - Energy efficient manufacturing.

- **University of Michigan/ (January 2009-April 2009 and September 2010-December 2010) /Position: Graduate Student Instructor for Mechanical Vibrations Course(Graduate Level) and Dynamics and Vibrations Course(Undergraduate level)**

- **German Jordanian University / (April 2007 – December 2007) /Position: Research and Teaching Assistant.**
  Research: Investigation of the Current Maintenance Engineering Implementation among Jordan's Industries

- **Petra Engineering Industries CO. / Research and Development (R&D) dept. (August 2006 – April 2007) /Position: R&D Engineer**
  Responsibilities:
  - Testing engineer [Conducting experimentations and simulations in the thermal laboratory for both Petra (new designs) and Third Party Tests air conditioning products. All tests follow ARI (Air-conditioning and Refrigeration Institute) standards and certified UL (Underwriters Lab.) and ITS (Intertek Lab.).
  - Development: improve performance of current products.
  - Research: seeking new innovations in air conditioning.

  Research conducted under the jurisdiction of Petra Engineering Ind. Co:
    - Liquid Refrigerant Pump Innovation
    - Coil performance prediction software development
    - Replacing refrigerant R22 with R410A
  - Business (new suppliers).

Undergraduate Employment Experience:

- **Collection Firm for Computers**: Amman, Jordan. Summer of '03. Position: Computer maintenance technician.

List of Subjects I taught:

• Thermodynamics (German Jordanian University, 2013-2014)
• Instrumentation and Measurements (German Jordanian University, 2013-2014)
• Engineering Economics (German Jordanian University. 2013-2014)
• Introduction to Dynamics and Vibrations (University of Michigan, 2010-2011) (TA)
•Mechanical Vibrations-Graduate Level (University of Michigan, 2008-2009) (TA)
• Heat and Mass Transfer (German Jordanian University, 2006-2007) (TA)
• Physics101 Lab. (German Jordanian University, 2006-2007) (TA)

Skills & Training Programs/Courses:

- **Training Programs/Courses:**
  - ✓ Training Internship in **Germany**: Eight weeks Undergraduate Training program for mechanical engineering in Freiberg, Germany at the institute of Thermodynamics in **"Technische Universitat Bergakademie Freiberg"** (Part of the team investigating numerical simulations for heat exchangers). (July,2005)
- **Computer skills:**
  - ✓ **C**omputer **A**ided **D**esign (***AutoCAD***®)
  - ✓ CarSim®
  - ✓ MATLAB®, Simulink® and Maple®
- **Languages:**
  - ✓ **Arabic:** (Mother Tongue)
  - ✓ **English:** Excellent writing and speaking

Honors and Scholarships:

- ***Best Student Paper Award in the Area of Applications in International Conference on Operations Research and Enterprise Systems (ICORES2013)***, Paper: A Maintenance-optimal Swapping Policy- for a Fleet of Electric or Hybrid-electric Vehicles, Barcelona, Spain (2013).
- ***Scholarship to pursue graduate studies*** provided by the German Jordanian University, school of technological sciences, the maintenance engineering dept. (2007)
- **Rank 1 with excellent GPA assessment** in the ***Mechanical Engineering Dept. in the University of Jordan*** (2006 class) with early graduation (4 years instead of 5).
- ***Paid Training-ship in Freiberg, Germany*** at the institute of Thermodynamics in Technische Universitat Bergakademie Freiberg provided by DAAD and IAESTE (International Association for the Exchange of Students and Technical Experience) for eight weeks (2005)
- ***Army Forces Royal Scholarship*** during Undergraduate study (Mechanical Engineering) , included tuition and basic salary (2002-2006)
- ***High School Scholarship*** from two schools

Publications

- **Almuhtady**, S. Lee, E. Romeijn, M. Wynblatt, and J. Ni, 2012, "A Degradation-Informed Battery-Swapping Policy for Fleets of Electric or Hybrid-Electric Vehicles," *Journal of Transportation Science*, TS-2013-0494.
- **Almuhtady**, S. Lee, and J. Ni, 2012, "Degradation-based Swapping Policy with Application to System-Level Manufacturing Utilization," *Proc. of ASME 2012 International Manufacturing Science and Engineering Conference*, Notre Dame, IN. (MSEC2012-7280)
- **Almuhtady**, S. Lee, E. Romeijn, and J. Ni, 2013, "A Maintenance-optimal Swapping Policy for a Fleet of Electric and Hybrid-Electric Vehicles" *ICORES2013 (International Conference for Operations Research and Enterprise Systems),*Best Student Paper Award, Barcelona, Spain
- **Almuhtady**, S. Lee, and J. Ni, 2013, "Joint maintenance and production planning by maintenance-optimal swapping," *Proc. of ASME 2013 International Manufacturing Science and Engineering Conference*, Madison, WI. (MSEC2013-1076)