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Department of Mechatronics Engineering
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Research Interests

- Mechatronics Systems: Control and design
- Control of MEMS
- Robotics: Dynamics and Control
- Renewable Energy
- Intelligent Systems
- Advanced Automotive Systems

Education

- Dec. 2006** PhD, University of Ottawa, Faculty of Engineering, Department of Mechanical Engineering, Canada. **CGPA 9.6/10.**
Dissertation: "A Novel Energy Based Design Methodology of Sliding Mode Controllers for Tracked Autonomous Guided Vehicles"
- Sept. 2002** Master in Mechanical Engineering, University of Ottawa, Faculty of Engineering, Department of Mechanical Engineering, Canada.
(Switched into the Ph.D. program after finishing all degree requirements due to excellent research performance, interest in further study and high **CGPA: 9.7/10**).
- May 1998** Bachelor degree in Mechanical Engineering, Mu'tah University, Faculty of Engineering, Department of Mechanical Engineering, Jordan. **Honor Degree (Ranked first by order of merit among the 1998 graduates)**

Honors

- Sept. 2004-Sept. 2006** Granted Doctoral Research Scholarship for outstanding research performance, University of Ottawa, School of Graduate Studies, Canada.
- Sept. 2000-Sept. 2004** Granted Excellence Scholarship, ranked top on the 1998 graduates, sponsored by Hashemite University, Jordan.

- June 1998** Granted Mu'tah University Presidency Distinction Award, Mu'tah University, Jordan.
- Jan. 1997-May 1997** Grant of distinction, ranked top among the mechanical engineering students in the undergraduate level, sponsored by Mu'tah University, Jordan.

Experience

- Sept. 2014 - present** Department Chair, The Hashemite University, Department of Mechatronics Engineering, Jordan
- Sept. 2008 - present** **Assistant Professor**, The Hashemite University, Department of Mechatronics Engineering, Jordan
- Sept. 2007 - Sept. 2008** **Assistant Professor**, Um Al-Qura University, Department of Mechanical Engineering, Mecca, Saudi Arabia.
- Jan. 2007 - Sept. 2007** **Assistant Professor**, The Hashemite University, Department of Mechatronics Engineering, Jordan
- May 2004 - Sept. 2006** **Lecturer**, Electromechanical Control Systems at University of Ottawa, Faculty of Engineering, Department of Mechanical Engineering, Ottawa, Canada.
- Sept. 2000 - April 2004** **Graduate Research Assistant and Teaching Assistant** for different courses at the Mechanical Engineering department, Faculty of Engineering, University of Ottawa, Canada.
- Engineering Materials - Digital Control Systems.
- Machine Elements Design - Dynamics and Statics
- Nov. 1999-Aug. 2000** **Teaching Assistant** (AutoCAD), Hashemite University, Faculty of Engineering, Department of Civil Engineering, Zarqa, Jordan.
- Nov. 1998-May 1999** **Teaching Assistant** (Fluid Mechanics and Engineering Drawing) Jordan University of Science & Technology (JUST), Faculty of Engineering, Department of Mechanical Engineering, Irbid, Jordan.

Technical Qualifications

- Experienced in Dynamics and Design of mechanical systems.
- Experienced in designing software such as Solid Works and AutoCAD.
- User of Matlab/Simulink, LabView, C++, Assembly.
- Language Fluency: Arabic and English.

Funded Research Projects

- **Advanced Automotive Suspension System**

Funded by Hashemite University from 28/12/2010 – 28/12/2012 with the amount of 35,000 JD.

The aim of this project is to study the effect of road terrains on the automotive suspension system by building an advanced active suspension system to investigate experimentally the impact of bumps and humps of roads on the suspension of various vehicles.

- **Mechatronics Training Kit and Research Tool: Four-Bar Linkage Mechanism Driven by a geared DC Motor**

Funded by Hashemite University from 8/12/2010 – 8/12/2011 with the amount of 3,580 JD.

The aim of this project is to design and implement a Mechatronics system to be used in the lab as a training kit and research tool. The importance of this project came from the fact of having many applications of closed-loop four-bar planner linkages in most machinery designs in order to achieve a specific motion task.

Publications

Journal Publications

- **Ahmad Al-Jarrah**, Asma' Al-Tamimi and Mohammad Salah, “Application of Various Control Schemes on Hydraulic Actuated Automotive Cooling Systems”, *Intelligent Decision Technologies*, Vol. 16, pp.37-47, 2016.
- **Ahmad Al-Jarrah**, Mohammad Salah, Suleiman Banihani, Khalid Al-Widyan, and Anas Sameer, “Applications of Various Control Schemes on a Four-Bar Linkage Mechanism Driven by a Geared DC Motor”, *WSEAS Transactions on Systems and Control*, Vol. 10, 2015.
- **Ahmad Al-Jarrah**, Mohammad Ababneh, Suleiman Banihani, and Khalid Al-Widyan, "Synchronization of Chaotic Systems with Uncertain Time-Varying Parameters", *International Review of Mechanical Engineering (I.R.E.M.E.)*, Vol. 9, no. 6, pp. 568-575, 2015
- Tarek A. Tutunji, Mohammad Salah, **Ahmad Al-Jarrah**, Anas Ahmad, and Rabei Alhamdan, “ Modeling and Identification of a Four-Bar Linkage Mechanism Driven by a Geared DC Motor”, *International Review of Mechanical Engineering (I.R.E.M.E.)*, Vol. 9, no. 3, pp. 296-306, 2015.
- Asma Al-Tamimi, **Ahmad Al-Jarrah**, and Mohammad Salah, “Intelligent Control Techniques for Electrical Actuated Automotive Cooling Systems”, *International Journal of Control and Intelligent Systems*, Vol. 42, no. 2, pp. 1-11, 2014.
- S. Banihani, K. Al-Widyan, **A. Al-Jarrah**, and M. Ababneh, “A Genetic Algorithm Based Lookup Table Approach for Optimal Stepping Sequence of Open-Loop Stepper Motor Systems”, *Journal of Control Theory and Applications (JCTA)*, Vol. 11, no. 1, pp. 35-41, 2013.
- M. Ababneh, **A. Al-Jarrah**, K. Al-Widyan, and S. Banihani, “Variable Structure Control Schemes Based on Work and Energy Principle for SIMO Systems”, *Jordan Journal of Mechanical and Industrial Engineering*, Vol. 5, no. 5, pp. 407-417, 2011.

Conference Publications

- **A. Al-Jarrah**, M. Salah, and Asma Al-Tamimi, “Variable Structure Control Schemes for Hydraulic Actuated Automotive Cooling Systems”, *Proceedings of the 9th International Symposium on Mechatronics and its Applications (ISMA13)*, Amman, Jordan, April 9-11, 2013.
- Mohammad Salah, **Ahmad Al-Jarrah**, and Enver Tatlicioglu, “Nonlinear Control Techniques for Parallel Plate Micro Electrostatic Actuators in the Presence of Parasitics and Parametric Uncertainties”, in *Proceedings of the 13th IASTED International Conference on Control and Applications*, Vancouver, BC, Canada, 2011, pp. 36-41.
- **Ahmad Al-Jarrah**, Mohammad Salah, and Asma Al-Tamimi, “Fuzzy Logic Control Design for Advanced Vehicle Thermal Management System”, in *Proceedings of the 13th IASTED International Conference on Control and Applications*, Vancouver, BC, Canada, 2011, pp. 200-204.

Reviewed Publications for

- International Conference on Mechatronics and its Applications (ISMA)
- Journal of Franklin Institute.
- Journal of Mechanical and Industrial Engineering (JMMIE)
- IEEE/ASME Transactions on Mechatronics

Teaching Experience

- Automatic Control Systems (electro-mechanical)
- Advanced Control Systems (electro-mechanical)
- Transducers and Interfacing
- Design of Mechatronics Systems
- Dynamics
- Robotics Laboratory
- Automation Laboratory
- Control Systems Laboratory
- Technical Writing

Professional Membership

- Member, IEEE Robotics and Automation Society.
- Member, Institute of Electrical and Electronic Engineers (IEEE).
- Member, Jordanian Engineers Association (JEA).