Dr Mutaz Ryalat

Curriculum Vitæ

Department of Mechatronics Engineering
School of Applied technical sciences
German Jordanian University
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Education

2015 **PhD Mechatronics Engineering**, *University of Southampton*, UK.
Thesis: Design and Implementation of Nonlinear and Robust Control for Hamiltonian Systems: The Passivity-Based Control Approach.
Supervisor: Dr. Dina Shona Laila.

2007 **MSc Mechatronics Engineering**, *Loughborough University*, UK.
Thesis: Control of a Rotary Table for the SPIDER: a Synchro-Drive Grass Mower Mobile robot.
Supervisor: Prof. Robert Parkin.

2005 **BSc Mechatronics Engineering**, *The University of Jordan*, Jordan.

Professional Appointments

2020–Present **Associate Professor**, *Mechatronics Engineering Department*, German Jordanian University. Amman, Jordan

2020 – 2021 **Vice Dean**, *School of Applied Technical Sciences*, German Jordanian University. Amman, Jordan
Major achievements:

- Improving German year procedures and collaboration with German partners
- Establishing and developing the Digital Learning Strategy within the school and university
- Coordinating and supervising the implementation of the German accreditation system within the school
- Improving the study plans of the departments within the school
- Facilitating students issues in general

2017 – 2020 **Head of Mechatronics Engineering Department**, *School of Applied Technical Sciences*, German Jordanian University. Amman, Jordan
Major achievements:

- Developed the curriculum for a new Bachelor's degree by introducing artificial intelligence, industry 4.0 and internet of things to the Mechatronics Engineering programme.
- Established and developed educational labs in the areas of sensors and actuators, instrumentation and measurements, control, robotics and Mechatronics system design.
- Recruited new faculty and teaching assistants to meet the needs of the department.
- Established a Twin bachelor's degree (Robotics programme) with the University of Applied Sciences Würzburg-Schweinfurt

2015 – 2020 **Assistant Professor**, *Mechatronics Engineering Department*, German Jordanian University. Amman, Jordan

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2012 – 2015 **Graduate Teaching Assistant**, *Faculty of Engineering*, University of Southampton. Southampton, UK
Responsible for teaching theoretical aspects for lab experiments and supervising students when performing experiments during lab sessions and grading assignments.

2010 – 2011 **Teaching Assistant**, *Mechatronics Engineering Department*, German Jordanian University. Amman, Jordan
Responsible for teaching theoretical aspects for lab experiments and supervising students when performing experiments during lab sessions and grading assignments.

2008 – 2010 **Assistant Underwriter**, *International General Insurance*, Amman, Jordan
Assistant Underwriter, Construction and Engineering

▬▬▬ PUBLICATIONS

○ Peer-Reviewed Journals:

1. **M. Ryalat**, D. S. Laila, H. ElMoaqet and N. Almtireen, "Dynamic IDA-PBC control for weakly-coupled electromechanical systems," *Automatica*, vol. 115, 108880, **2020**.

2. **M. Ryalat**, D. S. Laila and H. ElMoaqet, "Adaptive Interconnection and Damping Assignment Passivity Based Control for Underactuated Mechanical Systems," *International Journal of Control, Automation and Systems*, vol. 19, no. X, pp. 1-14, **2020**.

3. **M. Ryalat**, H. Salim Damiri and H. ElMoaqet, "Particle Swarm Optimization of a Passivity-Based Controller for Dynamic Positioning of Ships," *Applied Sciences*, 10(20), 7314, **2020**.

4. **M. Ryalat**, H. Salim Damiri, H. ElMoaqet and I. AlRabadi, "An Improved Passivity-based Control of Electrostatic MEMS Device," *Micromachines*, 11(7), 688, **2020**.

5. H. ElMoaqet, M. Eid, M. Glos, **M. Ryalat** and T. Penzel, "Deep Recurrent Neural Networks for Automatic Detection of Sleep Apnea from Single Channel Respiration Signals," *Sensors*, 20(18), 5037, **2020**.

6. H. ElMoaqet, J. Kim, D. Tilbury, S.K. Ramachandran, **M. Ryalat** and C.-H. Chu, "Gaussian Mixture Models for Detecting Sleep Apnea Events Using Single Oronasal Airflow Record," *Applied Sciences*, 10(21), 7889, **2020**.

7. N. Almtireen, H. ElMoaqet and **M. Ryalat**, "Linearized Modelling and Control for a Twin Rotor System," *Automatic Control and Computer Sciences*, vol. 52, no. 6, pp. 539-551, **2018**

8. **M. Ryalat** and D. S. Laila, "A Robust IDA-PBC Approach for Handling Uncertainties in Underactuated Mechanical Systems," *IEEE Transactions on Automatic Control,* vol. 63, no. 10, pp. 3495-3502, **2018**.

9. **M. Ryalat** and D. S. Laila, " A simplified IDA-PBC design for underactuated mechanical systems with applications," *European Journal of Control*, vol. 27, pp. 1-16, **2016**.

○ Peer-Reviewed Conferences

1. **M. Ryalat**, M. Alsherqatli and H. ElMoaqet, "IoT-aided Smart Lawnmower," *In Proceedings of the 3rd International Symposium on Computer Science and Intelligent Control (ISCSIC 2019),*

Amsterdam, Netherlands, Article 65, pp. 1–8, **2019**.

2. H. ElMoaqet, I. Ismael, F. Patzolt and **M. Ryalat**, "Design and Integration of an IoT Device for Training Purposes of Industry 4.0," *In Proceedings of the 2nd International Symposium on Computer Science and Intelligent Control (ISCSIC '18)*, Stockholm, Sweden , Article 25, pp. 1–5, **2018**.

3. **M. Ryalat**, D. S. Laila, N. Almtireen and H. ElMoaqet, "A Novel Dynamic IDA-PBC Controller for Electrostatic MEMS Devices," *In Proceedings of the 2018 Annual American Control Conference (ACC)*, Milwaukee, WI, USA, pp. 2952-2957, **2018**.

4. H. ElMoaqet, Z. Almuwaqat, **M. Ryalat** and N. Almtireen, "A new algorithm for short term prediction of persistent atrial fibrillation," *In Proceedings of the 2017 IEEE Jordan Conference on Applied Electrical Engineering and Computing Technologies (AEECT)*, Aqaba, Jordan, pp. 1-6, **2017**.

5. **M. Ryalat**, D. S. Laila and M. M. Torbati, "Integral IDA-PBC and PID-like control for port-controlled Hamiltonian systems," *In Proceedings of the 2015 American Control Conference (ACC),* Chicago, IL, USA, pp. 5365-5370, **2015**.

6. **M. Ryalat** and D. S. Laila, "IDA-PBC for a class of underactuated mechanical systems with application to a rotary inverted pendulum," *In Proceedings of the 52nd IEEE Conference on Decision and Control,* Florence, Italy, pp. 5240-5245, **2013**.

Teaching Experience

German Jordanian University – Jordan

2015–Present **Lecturer, Lab Instructor, and Modules Coordinator**

- Statics and Dynamics
- Dynamics and Vibration
- Instrumentation and Measurements
- Control Systems I
- Control Systems II
- State-Space Control and Observers
- Robotics
- Engineering Economics
- Vibration and Control Lab
- Sensors and Actuators Lab
- Automatic Control Systems Lab
- Instrumentation and Measurements Lab
- Mechatronics System Design and Integration Lab

University of Southampton - Southampton, UK

2012–2015 **Teaching Assistant**
- Automatic Control Systems
- Automatic Control Systems lab
- Electronics Lab

Service to the Profession

Membership

2013–present
- Institute of Electrical and Electronic Engineering (IEEE)
- IEEE Young Professionals
- IEEE Control Systems Society
- IEEE Robotics and Automation Society
- IEEE Engineering in Medicine and Biology Society Membership

2005	Member, Jordan Engineers Association

Reviewer

2015–present	

- IEEE Transactions on Automatic control
- Automatica
- European Journal of control
- Journal of Systems and Control Engineering
- Journal of Intelligent & Robotic Systems
- Journal of the Franklin Institute
- International Journal of Adaptive Control and Signal Processing
- Annual American Control Conference (ACC)
- IEEE Conference on Decision and Control (CDC)

Conference Organisation

2021	2021 IEEE Jordan International Joint Conference on Electrical Engineering and Information Technology (JEEIT), Member of the the Scientific Committee , Amman, Jordan – 2021.

Awards and Honors

2020	IBM Digital Badge, "'IoT Cloud Developer - Explorer Award 2020"'
2018	First Prize in the 19th Arab Forum for Entrepreneurship (awarded by ACTSAU & AGYA for the best project in the track of information systems)
2011	Full PhD Scholarship at the University of Southampton, UK (*awarded by GJU*)

Computer skills

Languages & Packages	**C^{++}, MATLAB®, SIMULINK®, MAPLE®.**
Office Tools	**TEX(LaTeX, BibTeX), Microsoft Office.**
Platforms	**Windows.**
e-learning:	**Microsoft Teams, Moodle**

Languages

Arabic	**Mothertongue**
English	**Fluent (Speaking, Reading, and Writing).**