

CV | Mahmoud ABDELRAHIM

Personal Data

Place and Date of Birth: Egypt | 10 May 1983
Work Address: Mechanical Engineering Department, Assiut University,
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Research Interests

- Networked control systems
- Event-triggered control
- Hybrid dynamical systems
- Singularly perturbed systems
- Nonlinear control
- Optimization
- Robust stabilization
- Dynamic quantization

Education

Oct 2011- July 2014 | **PhD** in Automatic Control, **CRAN-CNRS-Université de Lorraine**, France
Thesis: "Output feedback event-triggered control"
2006-2010 | **M.Sc.** degree in Mechatronics Engineering, **Assiut University**, Egypt
Thesis: "Fuzzy Control of 2-DOF Robotic Arm"
2000-2005 | **B.Sc.** in Mechatronics Engineering, **Assiut University**, Egypt
Cumulative Average Grade: 80.77/100 (with honor's degree)

Professional Positions

November 2016-present | Lecturer at the Department of Mechanical Engineering,
Assiut University, Egypt
July 2015-October 2016 | Post-doc at the Eindhoven University of Technology (TU/e),
The Netherlands
Sep 2014-June 2015 | Research and teaching assistant (ATER), ESSTIN,
Université de Lorraine, France
Oct 2011-July 2014 | PhD Student, CRAN-CNRS-Université de Lorraine, France
Sep 2010-Sep 2011 | Assistant Lecturer, Assiut University, Egypt
Jan 2006-Sep 2010 | Demonstrator, Assiut University, Egypt

Teaching Experience

Year	Position	University	Volume
2015-2016	Post-doc	TU/e (Netherlands)	52h (Tut.)
2014-2015	Research and teaching assistant	ESSTIN (France)	96h (Lab hours)
2006-2011	Teaching assistant	Assiut University (Egypt)	2400h (Tut. + Labs)

Publications

Journal papers

- M. Abdelrahim, R. Postoyan and J. Daafouz and D. Nešić and W.P.M.H. Heemels, “Co-design of output feedback laws and event-triggering conditions for the L2-stabilization of linear systems”, *Automatica*, submitted.
- M. Abdelrahim, R. Postoyan and J. Daafouz and D. Nešić, “Robust event-triggered output feedback controllers for nonlinear systems”, *Automatica*, 75, 96-108, 2017.
- M. Abdelrahim, R. Postoyan, J. Daafouz and D. Nešić, “Stabilization of nonlinear systems using event-triggered output feedback controllers”, *IEEE Transactions on Automatic Control*, 61(9), 2682-2687, 2016.
- M. Abdelrahim, R. Postoyan and J. Daafouz, “Event-triggered control of nonlinear singularly perturbed systems based only on the slow dynamics”, *Automatica*, 52, 15-22, 2015.
- A. B. Sharkawy, M. M. Othman and A. A. Khalil, “A Robust Fuzzy Tracking Control Scheme for Robotic Manipulators with Experimental Verification”, *Intelligent Control and Automation*, 2, 100-111, 2011.

Conference papers

- M. Abdelrahim, V.S. Dolk and W.P.M.H. Heemels, “Input-to-state stabilizing event-triggered control for linear systems with output quantization”, *In Proceedings of the 55th IEEE Conference on Decision and Control, Invited Paper, Las Vegas, U.S.A*, PP. 483-488, 2016.
- M. Abdelrahim, R. Postoyan, J. Daafouz and D. Nešić, “Event-triggered dynamic feedback controllers for nonlinear systems with asynchronous transmissions”, *In Proceedings of the 54th IEEE Conference on Decision and Control, Invited Paper, Osaka, Japan*, PP. 5494-5499, 2015.
- M. Abdelrahim, R. Postoyan, J. Daafouz and D. Nešić, “Input-to-state stabilization of nonlinear systems using event-triggered output feedback controllers”, *In Proceedings of the 14th European Control Conference, Linz, Austria*, PP.2185–2190, 2015.
- M. Abdelrahim, R. Postoyan, J. Daafouz and D. Nešić, “Co-design of output feedback laws and event-triggering conditions for linear systems”, *In Proceedings of the 53rd IEEE Conference on Decision and Control, Invited Paper, Los Angeles, U.S.A*. PP.3560-3565, 2014.

- M. Abdelrahim, R. Postoyan, J. Daafouz and D. Nešić, “Stabilization of nonlinear systems using event-triggered output feedback controllers”, *In Proceedings of the 21th International Symposium on Mathematical Theory of Networks and Systems, Groningen, The Netherlands, PP.274-281, 2014.*
- M. Abdelrahim, R. Postoyan and J. Daafouz, “Event-triggered control of nonlinear singularly perturbed systems based only on the slow dynamics”, *In Proceedings of the 9th IFAC Symposium on Nonlinear Control Systems, Invited Paper, Toulouse, France, PP.347-352, 2013.*

Book contribution

- M. Abdelrahim, R. Postoyan, J. Daafouz and D. Nešić, “Output feedback event-triggered control”, in “Delays In Networked Control Systems”, Editors: A. Seuret, L. Hetel, J. Daafouz and K.H. Johansson, Springer International Publishing Switzerland, PP.113-131, 2016.

Other research activities

- **Reviewer for:**

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| - IEEE Transaction on Automatic Control | - IMA Journal of Mathematical Control and Information |
| - Automatica | - International Journal of Systems Science |
| - Journal of the Franklin Institute | - IEEE Conference on Decision and Control |
| - IET Control Theory and Applications | - European Control Conference |
| - IEEE Transactions on Control of Network Systems | - IFAC World Congress |
| - Nonlinear Analysis: Hybrid Systems | - American Control Conference |
| - International Journal of Robust and Non-linear Control | - SIAM conference |
| | - Indian Control Conference |

- **Member of jury:**

- Stefan Heijmans, M.Sc. thesis “Interconnected Systems with Networked Communication: A Stability and Performance Analysis”, Eindhoven University of Technology (TU/e), 2015.

- **Co-supervision:**

- Ernesto Aranda-Escolástico (7 months), Ph.D. work on “Periodic event-triggered control for polynomial systems”, Eindhoven University of Technology (TU/e), 2016.
- Akarsh Sinha (6 months), M.Sc. thesis “Real-Time Path Planning and Collision Avoidance for Robotic Manipulators”, Eindhoven University of Technology (TU/e), 2016.
- Bo Cong (6 months), Internship thesis “Stabilizability of Discrete-time Switched Linear Systems”, Eindhoven University of Technology (TU/e), 2016.

Collaboration with the industry

- Bosch company, Nancy, France, October 2014 - June 2015.

Presentations and invited talks

- 55th IEEE Conference on Decision and Control (CDC 2016), Las Vegas, U.S.A., Invited paper.
- 14th European Control Conference (ECC 2015), Linz, Austria.
- Réunion GT SDH-ENSAM, Paris, Invited talk “Event-triggered control of nonlinear singularly perturbed systems based only on the slow dynamics”, 2015.
- 54th IEEE Conference on Decision and Control (CDC 2015), Osaka, Japan, Invited paper.
- 53rd IEEE Conference on Decision and Control (CDC 2014), Los Angeles, U.S.A, Invited paper.
- 21th International Symposium on Mathematical Theory of Networks and Systems (MTNS 2014), Groningen, The Netherlands.
- Université catholique de Louvain, Belgium, Invited talk “Output feedback event-triggered control”, 2014.
- 9th IFAC Symposium on Nonlinear Control Systems, 2013 (Toulouse, France).

Training

Scientific

- **Event-triggered and Self-triggered Control**, W.P.M.H. Heemels, Karl-Henrik Johansson, Paulo Tabuada, International Graduate School on Control 2013, EECI, Gif-sur-Yvette, France.
- **Introduction to Nonlinear Control**, Hassan Khalil, EECI-HYCON2 Graduate School on Control 2012, Gif-sur-Yvette, France.
- **Hybrid Dynamical Systems: Stability and Control**, Andrew Teel, EECI-HYCON2 Graduate School on Control 2012, Gif-sur-Yvette, France.

Professional

- **Dealing with work pressure**, ElroyCOM Training, Eindhoven University of Technology, Netherlands, 2015.
- **PCDI Postdoc Retreat STEM 2015**, Postdoc Career Development Initiative (PCDI), Kapellerput, Heeze, Netherlands, 2015.
- **Scientific writing with LaTeX**, Université de Lorraine, France, 2013.

Research groups

Control systems technology (CST); HYCON 2; SDH du GdR MACS; Control and Optimization of HYbrid systems (COPHY).

Scholarships and Projects

Sep 2013-Aug 2014 Centre de Recherche en Automatique de Nancy

Sep 2011-Jul 2013 Erasmus Mundus Flow By Flow EU-Egypt Bridge Building

Programming

MATLAB, C++, FORTRAN

Languages

English: Very good

French: Intermediate

Arabic: Mother tongue

Qualification

Qualified from the French National Council of Universities (CNU) to work as an assistant professor (**Maitre de Conférences**) at the French universities, 61st section (Information engineering, Automatic control, Signal processing), with the qualification number: 15261271558, valid until 31 December 2019.

Professional membership

- IEEE Member
- Egyptian Engineers Syndicate

References

Prof. Maurice Heemels

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Eindhoven, Netherlands

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forêt de Haye, 54516 Vandoeuvre-lès-Nancy, France

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