

TAOUBA JOUINI

ADDRESS

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CONTACT

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CURRENT STUDIES

Doctoral studies in Control Engineering under the supervision of Prof. Anders Rantzer. My research interests are centered around mathematical control theory of multi-agent systems and large-scale networks.

EDUCATION

MSc. of Science in Cybernetics engineering, University of Stuttgart (**Excellent**), June 2016
BSc. of Science in Cybernetics engineering, University of Stuttgart (**Excellent**), October 2013
German language Certificate (**Excellent**, DSH-3), University of Heidelberg, June 2010
Baccalaureat (**With distinction**), Bourguiba Pioneer School of Tunis, June 2009

RESEARCH EXPERIENCE

Graduate Research Assistant ETH Zurich
Automatic control Laboratory (IfA)
Analysis of extensions on DC/AC converter control schemes and local network synchronization in power systems.
Supervisors: Prof. Florian Dörfler, December 2016 - January 2019

Visiting Student ETH Zurich
Automatic control Laboratory (IfA)
Master Thesis: *Grid-friendly Matching Control of Synchronous Machines by DC/AC Converters in Bulk Power Networks*
Supervisors: Prof. Florian Dörfler and Prof. Frank Allgöwer, Decembre 2015 - May 2016

Research Assistant University of Stuttgart
Institute of System Theory and Automatic Control (IST)
Bachelor Thesis: *Multistabilitätsanalyse von Genregulationssystemen anhand von Konzepten der Mehrgrössenregelung*
Supervisors: Dr. Daniella Schittler and Prof. Frank Allgöwer, May 2013 - September 2013

TEACHING ASSISTANCE

ETH Zurich, CH
System Identification (HS18/19)
Signals and Systems II (SS18)
Control System I (HS17/18)

LTH - Lund University, Lund, SE
Predictive control (SS20)
System Identification (HS19/20)

REVIEW ACTIVITY

Elsevier Energy Books
Conference on Decision and Control (CDC)

STUDENT SUPERVISION

Adaptive provision of virtual inertia on a transmission system level, Chu Zhongda, ETH-Zurich, September 2017 - February 2018

INVITED TALKS

Regular Talk, “Parametric local stability in a multi-converter system”. *Department of Automatic Control*, LTH- Lund University, September 2019.

Regular IfA Talk, “Local Synchronization of Two Converters Via Matching Control”. *Automatic Control Laboratory*, ETH Zurich, December 2018.

ABB - IfA Meeting, “Control of Power Converters via Matching of Synchronous Machines”. *Automatic Control Laboratory*, ETH Zurich, May 2018.

Regular Talk, ‘Grid-forming Control for Power Converters based on Matching of Synchronous Machines. *Automatic Control Laboratory*’, EPFL Lausanne, February 2018.

PROJECTS

Work Package III

MIGRATE

Massive Integration of Power Electronics Devices
December 2016 - January 2019

An EU-funded project under the framework of European Union’s Horizon 2020 addressing the challenges of low inertia systems.

SOCIAL EXPERIENCE

Project Management

Unsere Welt Spricht weiblich

Association of Tunisian University Graduates (VtAS)
January - Novembre 2014

Supervisor: Forum der Kulturen in Stuttgart in the frame of the project initiative financed by Abteilung für Integration der Stadt Stuttgart and Bundesmat für Migration and Flüchtlinge.

Partners: Association of Mongolian University Graduates

HONORS AND AWARDS

EPFL Excellence Fellowship (Academic year 2019 - 2020)

Swiss-Mobility Program Scholar (December 2015 - May 2016)

Ranked 46 - out of nearly 57200 applicants that passed the nation-wide Baccalaureat exam and out of nearly 134 000 applicants that wrote the exam.

Tunisian - DAAD Full Government Scholarship (September 2009 - October 2016)

Supervisors: German Academic Exchange Service (DAAD)

Tunisian Ministry of Higher Education and Scientific Research

PROGRAMMING SKILLS

Extensive knowledge of LaTeX
Extensive knowledge of Matlab
Git
Mathematica
Java, XML, HTML, C++, C
Julia

LANGUAGE SKILLS

English: Excellent (C1)
German: Excellent (C1)
French: Excellent (C1)
Arabic: Mother-tongue (C2)
Swedish: Basic knowledge
Japanese: Basic knowledge

MEMBERSHIPS

IEEE Student member (2019)
IEEE WIE (Women In Engineering) member (2019)

POSTERS

T. Jouini, C. Arghir, F. Dörfler, Nonlinear Model Matching of Synchronous Generators by Inverters in Low-Inertia Power Grids, *Future Electric Power Systems and the Energy Transition, 1st international conference*, Champéry, 5-9 February 2017.

PUBLICATIONS

(J1) T. Jouini, F. Dörfler, Parametric local condition of a multi-converter system, *submitted to IEEE Transactions on Automatic Control, April 2019, Under Review*.

(J2) C. Arghir, T. Jouini¹, F. Dörfler, Grid-forming Control for Power Converters based on Matching of Synchronous Machines, *Automatica 95 (2018): 273-282*.

(J3) D. Schittler, T. Jouini, F. Allgöwer, S. Waldherr, Multistability equivalence between gene regulatory networks of different dimensionality with application to a differentiation network, *International Journal of Robust and Nonlinear Control 26.18 (2016): 4148-4168*.

(C1) T. Jouini, F. Dörfler, Local Synchronization of Two DC/AC **(C1)** Converters via Matching Control, *2019 18th European Control Conference (ECC). IEEE, 2019..*

(C2) T. Jouini, C. Arghir, F. Dörfler. Grid-friendly matching of synchronous machines by tapping into the DC storage. *IFAC-PapersOnLine 49.22 (2016): 192-197*.

Miscellaneous

(M1) T. Jouini, F. Dörfler, Parametric local stability condition of a multi-converter system, *ArXiv preprint ArXiv:1904.11288 (2019)*

¹first two authors contributed equally

(M2) D. Schittler, **T. Jouini**, F. Allgöwer, Generalization of the construction method for multistability-equivalent gene regulatory networks to systems with multi-input multi-output loopbreaking, *ArXiv preprint ArXiv:1312.7250* (2013).