Fethi Bencherki, Licentiate

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Education

2021-Present **Ph.D. in Automatic Control**, Lund University, Sweden
Advisor: Prof. Anders Rantzer
(**GPA: pass/fail only**)

2021-24 **Licentiate in Automatic Control**, Lund University, Sweden [Diploma]
(**GPA: pass/fail only**)
Thesis title: *Adaptive Control of Positive Systems [link]*

2017-20 **M.Sc. in Control Systems**, Eskisehir Technical University, Turkey [Diploma]
(**GPA: 3.96/4.0, Valedictorian**)
Thesis title: *State-space identification of switched linear systems via sparse optimization [link]*

2016-17 **M.Sc. in Control Engineering**, Institute of Electrical and Electronic Engineering, Boumerdes, Algeria
(**GPA: 16.69/20, Valedictorian**)

2012-15 **B.Sc. in Electrical and Electronic Engineering**, Institute of Electrical and Electronic Engineering, Boumerdes, Algeria [Diploma]
(**GPA: 15.90/20, Valedictorian**)

Research interests

My research focuses on learning and control in large-scale networks, with particular emphasis on positive systems. I am also broadly interested in learning-based control and system identification, with a specific focus on switched linear systems.

Research experience

2021-Present **Ph.D. student**, Department of Automatic Control, Lund University
Mar 2025-Jun 25 **Visiting researcher**, at Electrical and Systems Engineering Department, University of Pennsylvania, (Host: Prof. Nik Matni)

Industry experience & study trip

2023 Participant in WASP Study Trip to Boston, MA, United States
Visiting Boston Dynamics, MathWorks, PTC, Motional, MERL, Robotics lab at Harvard and MIT

Jun 2018 - Aug 18	Trainee at Turkish Airlines, Flight Simulation Department, Istanbul, Turkey Worked on visualizing different flight control processes using an Airbus A330 and Boeing flight simulators, understanding and mastering the simulators operations, fault detection and security procedures
Mar 2016 - May 16	Trainee at Sonelgaz, Chlef, Algeria Understanding the operation of an electricity distribution network within a thermal power station, building electronic circuits from design to final kits mounted on printed circuit boards (PCBs) based on through-hole technology

Awards & honors

2025	Recipient of the 2025 American Control Conference (ACC) student travel award
2025	Recipient of WASP Research Stint Abroad
2024	Recipient of Landshövding Per Westlings Minnesfond grant
2024	Recipient of Sigfrid och Walborg Nordkvist grant
2016-2021	Recipient of Turkish government graduate program scholarship A master program Scholarship to cover tuition fees, accommodation and a monthly stipend

Publications

Journal articles

J1. **Bencherki, Fethi** & Rantzer, A. Data-Driven Adaptive Dispatching Policies for Processing Networks. *IEEE Control Systems Letters* (2024).

J2. **Bencherki, Fethi**, Türkay, S. & Akçay, H. Basis transform in linear switched system models from input–output data. *International Journal of Adaptive Control and Signal Processing* **37,** 3151–3168 (2023).

J3. **Bencherki, Fethi**, Türkay, S. & Akçay, H. Realization of multi-input/multi-output switched linear systems from Markov parameters. *Nonlinear Analysis: Hybrid Systems* **48,** 101311 (2023).

Peer-reviewed conference proceedings

C1. **Bencherki, Fethi** & Rantzer, A. *Adaptive Control of Positive Systems with Application to Learning in SSP Problems* in *7th Annual Learning for Dynamics & Control Conference* (2025).

C2. **Bencherki, Fethi**, Türkay, S. & Akçay, H. *MIMO-SLS Identification from Input-Output Data* in *2024 IEEE 18th International Conference on Control & Automation (ICCA)* (2024), 62–65.

C3. **Bencherki, Fethi**, Türkay, S. & Akçay, H. *Realization of MIMO-SLSs from Markov Parameters via Forward/Backward Corrections* in *2024 European Control Conference (ECC)* (2024), 3138–3143.

C4. **Bencherki, Fethi** & Rantzer, A. *Robust simultaneous stabilization via minimax adaptive control* in *2023 62nd IEEE Conference on Decision and Control (CDC)* (2023), 2503–2508.

C5. Ohlin, D., **Bencherki, Fethi** & Tegling, E. *Achieving consensus in networks of increasingly stubborn voters* in *2022 IEEE 61st Conference on Decision and Control (CDC)* (2022), 3531–3537.

Preprints

P1. **Bencherki, Fethi**, Türkay, S. & Akçay, H. *Multi-input/multi-output switched-linear system identification from input-output data* 2024.

P2. **Bencherki, Fethi**, Türkay, S. & Akçay, H. *Observer-based switched-linear system identification* 2021.

Presentations

Talks

T1. **Bencherki, Fethi**. *Adaptive control in the presence of uncertainty* Presented my work at Department of Electrical and Systems Engineering, the University of Pennsylvania (Philadelphia, PA, US). Apr. 2025.

T2. **Bencherki, Fethi**. *Adaptive Control of Positive Systems* Licentiate Thesis Presentation (Lund, Sweden). [slides]. Mar. 2025.

T3. **Bencherki, Fethi**. *Data-driven adaptive dispatching policies for queueing systems* 26th International Symposium on Mathematical Theory of Networks and Systems (Cambridge, UK). [slides]. Aug. 2024.

T4. **Bencherki, Fethi**. *MIMO-SLS identification from input-output data* 18th IEEE International Conference on Control & Automation (ICCA 2024) (Reykjavik, Iceland). [slides]. June 2024.

T5. **Bencherki, Fethi**. *Realization of MIMO–SLSs from Markov parameters via forward/backward corrections* European Control Conference 2024 (ECC24) (Stockholm, Sweden). [slides]. June 2024.

T6. **Bencherki, Fethi**. *Robust Simultaneous Stabilization via Minimax Adaptive Control* 62nd IEEE Conference on Decision and Control (CDC24) (Singapore). [slides]. Dec. 2023.

Posters

P1. **Bencherki, Fethi** & Rantzer, A. *Adaptive Control of Positive Systems with Application to Learning in SSP Problems* 7th Annual Learning for Dynamics & Control Conference (L4DC) (University of Michigan, Ann Arbor, US). [Poster, soon to appear]. June 2025.

P2. **Bencherki, Fethi** & Rantzer, A. *Learning Optimal Dispatching Policies in Queueing Systems* WASP winter conference (Norrköping, Sweden). [Poster]. Jan. 2024.

P3. **Bencherki, Fethi** & Rantzer, A. *Efficient Adaptive Robust Stabilization* WASP winter conference (Norrköping, Sweden). [Poster]. Jan. 2023.

P4. **Bencherki, Fethi** & Rantzer, A. *Guarantees on multiple model robust stabilization via Minimax adaptive control* WASP winter conference (Norrköping, Sweden). [Poster]. Jan. 2022.

P5. Ohlin, D., **Bencherki, Fethi** & Tegling, E. *Achieving consensus in networks of increasingly stubborn voters* ELLIIT Annual Workshop (linköping, Sweden). [Poster]. Oct. 2021.

Teaching

Lund University

2021-2024 **Teaching Assistant and Lab Responsible** in *Non-Linear Control and Servo Systems course*
2021-2024 **Teaching Assistant and Lab Responsible** in *Automatic control, basic course*

Academic service

Journal reviewer

2024 **Nonlinear Analysis: Hybrid Systems**
2024 **IEEE Control Systems Letters (L-CSS)**

2025 **IEEE Transactions on Automatic Control**

Conference reviewer

2025 **American Control Conference**, Denver, Colorado, US, 8-10 July, 2025
2024 **IEEE Conference on Decision and Control**, Milan, Italy, December 16-19, 2024
2024 **European Control Conference**, Stockholm, Sweden, 25-28 June, 2024
2024 **7th Annual Learning for Dynamics & Control Conference**, Michigan, Ann Arbor, 4-6 June, 2025

Organized conferences

2024 **European Control Conference 2024 (ECC24)**, KTH Royal Institute of Technology, Stockholm, Sweden, 25-28 June, 2024.
Role: Volunteer to help with registration, parallel sessions, etc

Skills

Programming languages

Competent	Python
Previous experience	C++, R, Matlab, SQL, Julia, Spark
Tools	Git, LaTeX

References

- Prof. Anders Rantzer, Professor of Automatic Control at Lund University, Dept.of Automatic Control, Lund, Sweden, email: anders.rantzer@control.lth.se
- Prof. Hüseyin Akçay, Professor of Automatic Control at Eskisehir Technical University, Dept.of Electrical and Electronics Engineering, Eskisehir, Turkey, email: huakcay@eskisehir.edu.tr