

## Arash Bahari Kordabad

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### CONTACT & PERSONAL INFORMATION

*E-mail:* Arash.b.kordabad@ntnu.no  
*Homepage:* [www.ntnu.edu/employees/arash.b.kordabad](http://www.ntnu.edu/employees/arash.b.kordabad)  
*Date and Place of Birth:* Feb.10,1995, Tabriz, Iran  
*Marital Status:* Married

Arashbahari20@gmail.com  
*Tell:* (+47) 48406162  
*Nationality:* Iranian

### RESEARCH INTERESTS

Control Theory, Reinforcement Learning, Optimal Control, Model Predictive Control

### EDUCATION

**Norwegian University of Science and Technology(NTNU)**, Trondheim, Norway

Ph.D., Department of Engineering Cybernetics

**Feb.2020 - present**

- Thesis Topic: “Theoretical properties of Learning-based MPC”
- Supervisor: Prof. Sébastien Gros
- Co-Supervisor: Prof. Anastasios Lekkas

**Sharif University of Technology**, Tehran, Iran

M.S., Department of Mechanical Engineering

**Sep.2017 - Sep.2019**

- Thesis Topic: “Control of Bifurcation and Chatter Suppression in Peripheral Milling Process”
- Supervisor: Prof. Hamed Moradi
- GPA: 19.41/20

**University of Tabriz**, Tabriz, Iran

B.S., Department of Mechanical Engineering

**Sep.2013 - Sep.2017**

- Thesis Topic: “On the Muscle Models as Viscoelastic Material and Comparison of Force-Length Models for Active Skeletal Muscle”
- Supervisor: Prof. Kamal Jahani
- GPA: 18.1/20

### HONORS AND AWARDS

Having received the honour as the First rank of Mechanical Engineering at Sharif University of Technology **2018**

Present among 40 top Mechanical Engineering students from all over the country. (Scientific Olympiads for university student) **2017**

Ranked Five among 99 Mechanical Engineering students in Bachelor Degree. **2017**

Ranked top 0.2 of 250,000 participants (669<sup>th</sup>) in the National Universities Entrance Exam known as “KONKOOR” for B.Sc. degree. **2013**

### SELECTED COURSES

Advanced Nonlinear Systems (PhD course) Numerical Optimal Control (PhD course)

Intelligent Systems:19.3/20

Nonlinear Control:19.3/20

Robust Control:19.3/20

Advanced Mathematics:20/20

Stochastic Control:19.4/20

Advanced Dynamics:19.9/20

Automatic Control:20/20

Modern Control:18.9/20

Robotic:20/20

### ACADEMIC EXPERIENCE

*Guest PhD*

**2021-2022**

Electrical and Electronic Engineering, Aalborg University, Aalborg, Denmark, with Prof. Wisniewski. Research area: Safe RL

*Teaching Assistant*

**2018**

Automatic Control course for Undergraduate students at Sharif University of Technology.

*Intelligent Systems Project*

2018

Solving Traveller Salesperson using the Continuous Genetic Algorithm, M. Broushaki.

*Modern Control Project*

2017

Designing Luenberger Observer and Pole Placement Control for the Dual Inverse Pendulum in the state of Continuous and Discrete time, H. Salarieh.

*Dynamic of Machinery Project*

2015

Design of Four-bar Linkage for Path Following, M. Ettetfagh.

JOURNAL  
PUBLICATIONS

- W. Cai, **Bahari Kordabad, A.**, Gros, S. (2022). “Energy Management in Residential Micro-grid Using Model Predictive Control-based Reinforcement Learning and Shapely Value”. *Engineering Applications of Artificial Intelligence*. [Submitted]
- **Bahari Kordabad, A.**, Gros, S. (2022). “Learning of the Storage Function in Economic Nonlinear MPC” .*Engineering Applications of Artificial Intelligence*. [Submitted]
- **Bahari Kordabad, A.**, Moradi, H. (2021). “Lyapunov based robust optimal control for time-delay systems with application in milling process” .*Journal of Process Control* . [Submitted]
- **Bahari Kordabad, A.**, Boroushaki, M. (2020). “Emotional Learning Based Intelligent Controller for MIMO Peripheral Milling Process” . *Journal of Applied and Computational Mechanics*, 6(3), 480-492.

CONFERENCE  
PUBLICATIONS

- **A. Bahari Kordabad**, and S. Gros, “Functional stability of discounted MDPs using Economic MPC dissipativity theory”, *2022 European Control Conference (ECC)*, 2022. [submitted]
- **A. Bahari Kordabad**, H. Nejatbakhsh Esfahani, W. Cai, and S. Gros, “Quasi-Newton Iteration in Deterministic Policy Gradient”, *2022 American Control Conference (ACC)*, 2022.
- W.Cai, H. Nejatbakhsh Esfahani, **A. Bahari Kordabad**, and S. Gros, “Optimal Management of the Peak Power Penalty for Smart Grids Using MPC-based Reinforcement Learning”, *60th Conference on Decision and Control (CDC)*, 2021.
- **A. Bahari Kordabad**, H. Nejatbakhsh Esfahani, W.Cai, and S. Gros, “Quasi-Newton Iteration in Deterministic Policy Gradient”, *60th Conference on Decision and Control (CDC)*, 2021.
- W.Cai, **A. Bahari Kordabad**, H. Nejatbakhsh Esfahani, A. M. Lekkas, and S. Gros, “MPC-based Reinforcement Learning for a Simplified Freight Mission of Autonomous Surface Vehicles”, *60th Conference on Decision and Control (CDC)*, 2021, [submitted].
- **A. Bahari Kordabad**, W. Cai, and S. Gros, “Multi-agent Battery Storage Management using MPC-based Reinforcement Learning”, *2021 IEEE Conference on Control Technology and Applications (CCTA)*
- **A. Bahari Kordabad**, and S. Gros, “Verification of Dissipativity and Evaluation of Storage Function in Economic Nonlinear MPC using Q-Learning”, *7th IFAC Conference on Nonlinear Model Predictive Control*, 2021.
- H. Nejatbakhsh Esfahani, **A. Bahari Kordabad**, and S. Gros, “Approximate Robust NMPC using Reinforcement Learning”, *2021 European Control Conference (ECC)*
- **A. Bahari Kordabad**, H. Nejatbakhsh Esfahani, and S. Gros, “Bias Correction in Deterministic Policy Gradient Using Robust MPC”, *2021 European Control Conference (ECC)*
- **A. Bahari Kordabad**, W. Cai, and S. Gros, “MPC-based reinforcement learning for economic problems with application to battery storage”, *2021 European Control Conference (ECC)*

- H. Nejatbakhsh Esfahani, **A. Bahari Kordabad**, and S. Gros, “Reinforcement learning based on MPC/MHE for unmodeled and partially observable dynamics”, *2021 American Control Conference (ACC)*.
- **A. Bahari Kordabad**, H. Nejatbakhsh Esfahani, A. M. Lekkas, and S. Gros, “Reinforcement learning based on scenario-tree MPC for ASVs”, *2021 American Control Conference (ACC)*.

LANGUAGE

Persian

Turkish

English

Norwegian

REFERENCES

Sebastien Gros  
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Hamed Moradi  
*hamedmoradi@sharif.edu*

Mehrdad Broushaki  
*boroushaki@sharif.edu*

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