Mohamad Al Ahdab

PERSONAL DETAILS

Birth	16th of April, 1993.
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EXPERIENCE

Postdoc Researcher Jan.2026-present

Aalborg University

Investigating optimal control with a focus on adaptive and dual control.

Postdoc Researcher Jan.2024-Jan.2025

Aalborg University, Pioneer Centre for AI

Control approaches for AI with applications in diabetes in collaboration with Novo Nordisk. Investigating topics such as active sensing and learning dynamical systems with guarantees.

Research Assistant for Clinical Testing of Algorithms Jul.2023-Jan.2024

Aalborg University

Assisting in implementing one of the dosing algorithms developed during my PhD for clinical testing.

Research Assistant on COVID-19 Apr.2020-Jul.2020

Aalborg University

Working on developing decision support strategies for the Danish authorities regarding the COVID-19 epidemic within a collaborative project funded by the Novo Nordisk Foundation's emergency coronavirus program.

Research Assistant with Robotics Jul.2019-Jan.2020

Aalborg University

Working on implementing a model predictive controller for a ball robot to make it navigate in closed areas without colliding with obstacles.

Teaching Jan.2020-present

Aalborg University

I designed and delivered nine lectures for the course "Optimization and Introduction to Machine Learning"; created and taught a hands-on robotic-navigation mini-project for the "Robot Mobility" and "Optimal and Robust Control" courses; Contributed to a PhD course on Optimal Control; gave two annual lectures on MCMC techniques and Particle Filters for the "Complex Systems" course; and supervised three bachelor projects and ten master's projects in areas spanning diabetes, active sensing, and satellite applications.

RESEARCH STAYS

Norwegian University of Science and Technology Apr.2022-Jul. 2022

Designing a sensor fusion algorithm for fusing several glucose monitors for an animal experiment.

EDUCATION

Ph.D. (Aalborg University) Jan.2020-Jul.2023

M.Sc. Control and Automation (Aalborg University) Sep.2017-Jun.2019

Graduated with a 12/12 grade.

B.Sc. Mechatronics Engineering (University of Jordan) 2012-2016

PUBLICATION LIST OF MOHAMAD AL AHDAB

- **Al Ahdab, Mohamad**; Tan, Zheng-Hua; Leth, John, "Distributions and Direct Parametrization for Stable Stochastic State-Space Models," in IEEE Control Systems Letters, vol. 9, pp. 444-449, 2025.
- **Al Ahdab, Mohamad**; Leth, John; Tan, Zheng-Hua, "Optimal Sensor Scheduling and Selection for Continuous-Discrete Kalman Filtering with Auxiliary Dynamics," Accepted to the 42nd International Conference on Machine Learning (ICML), Proceedings of Machine Learning Research (PMLR).
- **Al Ahdab, Mohamad**; Knudsen, Torben; Stoustrup, Jakob, Leth, John, "Entropy for Optimal Control on a Simplex with an Application to Behavioural Nudging," in IEEE Control Systems Letters, vol. 7, pp. 2797-2802, 2023.
- **Al Ahdab, Mohamad**; Knudsen, Torben; Stoustrup, Jakob; Leth, John, "Online Optimization Approach for Calculating Basal Insulin Doses for Individuals with Type 2 Diabetes," in IEEE Transactions on Control Systems Technology, Early Access, 2025.
- **Al Ahdab, Mohamad**; Leth, John; Knudsen, Torben et al., "Glucose-Insulin Mathematical Model for the Combined Effect of Medications and Life Style of Type 2 Diabetic Patients", In the Biochemical Engineering Journal, Vol. 176, 108170, 12.2021.
- Clausen, Henrik Glavind; Knudsen, Torben; **Al Ahdab, Mohamad**; Leth, John, "A New Stochastic Approach for Modeling Glycemic Disturbances in Type 2 Diabetes," In the IEEE Transactions on Biomedical Engineering, Vol. 68, No. 10, 2021, p. 3161-3172.
- **Al Ahdab, Mohamad**; Knudsen, Torben; Stoustrup, Jakob, Leth, John, "{An Online Stochastic Optimization Approach for Insulin Intensification in Type 2 Diabetes with Attention to Pseudo-Hypoglycemia," in the 61th IEEE Conference on Decision and Control (CDC), IEEE, 2022.
- **Al Ahdab, Mohamad**; Knudsen, Torben; Stoustrup, Jakob, Leth, John, "Blood Glucose Reference Personalization for Subjects with Type 2 Diabetes," in the 2023 IEEE Conference on Control Technology and Applications (CCTA).
- **Al Ahdab, Mohamad**; Davari Benam, Karim; Khoshamad, Hasti; Lyngvi Fougner, Anders; Gros, Sebastien, "Sensor Fusion for Glucose Monitoring Systems," in the IFAC World Congress 2023.
- R. Gomez, Aitor; **Al Ahdab, Mohamad**, "Momentum-Based Learning of Nash Equilibria for LISA Pointing Acquisition," in the IFAC World Congress 2023.
- **Al Ahdab, Mohamad**; Knudsen, Torben; Leth, John, "State Space Temporal Gaussian Processes for Glucose Measurements," in the 2022 European Control Conference (ECC), IEEE, 2022.
- **Al Ahdab, Mohamad**; Papez, Milan; Knudsen, Torben; Leth, John, "Parameter Estimation for a Jump Diffusion Model of Type 2 Diabetic Patients in the Presence of Unannounced Meals," in the 2021 IEEE Conference on Control Technology and Applications (CCTA), IEEE, 2021, p. 176-183.
- **Al Ahdab, Mohamad**; Clausen, Henrik Glavind; Knudsen, Torben; Leth, John, "Parameter Estimation in Type 2 Diabetes in the Presence of Unannounced Meals and Unmodelled Disturbances," in the 2021 European Control Conference (ECC), IEEE, 2021, p. 1277-1282.
- Jespersen, Thomas Kølbæk; **Al Ahdab, Mohamad**; Méndez, Juan de Dios Flores et al, "Path-Following Model Predictive Control of Ballbots," in the 2020 IEEE International Conference on Robotics and Automation (ICRA), IEEE, 2020, p. 1498-1504.

- Balla, Krisztian Mark; Eringis, Deividas; **Al Ahdab, Mohamad** et al, "Learning-Based Predictive Control with Gaussian Processes: An Application to Urban Drainage Networks," in the 2022 IEEE American Control Conference (ACC).