

Abdelhakim Amer

Industrial PhD student at Aarhus University/EIVA
MSc. in Mechanical Engineering from TU Delft
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SOCIAL LINKS

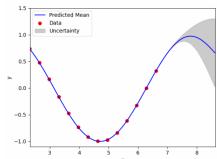
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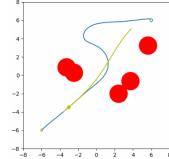
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PROFILE SUMMARY

I am passionate about robotics, autonomous systems, learning-based control, and field robotics for industrial applications. My research focuses on leveraging **machine learning** and **optimization** to improve robot trajectory tracking and enhance control, planning, and dynamics modeling in autonomous mobile robots. I'm driven by the challenge of advancing autonomous systems and bridging **theory** with practical solutions for **real-world applications**. My work includes:



Gaussian Processes



Model Predictive Control



Advanced Simulation

ACADEMICS

I hold a bachelor's in Mechanical Engineering (with High Honors), and a master's in High Tech Mechatronics Systems from Delft University of Technology, specializing in numerical methods, modeling, and control. I have been a visiting scholar at the German Center for Artificial Intelligence (DFKI). I am currently pursuing an Industrial PhD in learning-based optimal control at Aarhus University.



2022 - now

EIVA A/S, Denmark

PhD, Robotics and AI



2024 (1 month)

German Research Center for Artificial Intelligence, Germany

Visiting Scholar, Underwater Robotics Research Group



2023 (1 month)

University of Paderborn, Germany

Visiting Scholar, Automatic Control Research Group



2018 - 2021

Delft University of Technology, The Netherlands

Master, Mechanical Engineering



2013 - 2018

The American University in Cairo, Egypt

Bachelor, Mechanical Engineering (High Honors)

WORK EXPERIENCE

Prior to my PhD, I completed a 3-month internship at Royal IHC, where I worked on developing algorithms for path planning and control for autonomous shipping. After graduation, I spent a year at the AIR Lab at Aarhus University, working on an autonomous wind turbine inspection project in collaboration with Upteko, where I gained experience in software and hardware development for drones. I then began my industrial PhD at EIVA, where I am finalizing my research in learning-based optimal control, having developed novel methods for planning and control of autonomous underwater vehicles.

	2022 - 2025	EIVA A/S	PhD Researcher in Robotics and AI
	2021 - 2025	Aarhus University	Graduate Teaching Assistant in Control and Robotics
	2021 - 2022	Upteko ApS	R&D Engineer
	2021 - 2022	AIR Lab, Aarhus University	Research Assistant in Autonomous Systems
	2020 (3 months)	Royal IHC	Dynamics and Control Graduate Intern

PROGRAMMING EXPERIENCE </>

In recent years, I have primarily developed in Python and C++ for robotics applications, particularly in learning-based control and simulation. I have extensive experience with the ROS framework for integrating robotic systems. Additionally, I have worked with Unreal Engine for developing [high-fidelity simulations](#).



TEACHING AND SUPERVISION

As a Teaching Assistant at Aarhus University, I contributed to the following courses, providing support to students and assisting with course material:

- Autonomous Mobile Robots
- Control Theory

Additionally, I have supervised several Bachelor's and Master's theses, guiding students through projects in areas such as robot modelling and advanced control.

	Fall 2024	MSc Thesis: Underwater Vehicle Modeling and Control using PINNs
	Fall 2023	R&D Project: 3-D printing ship propeller cleaning ROV design
	Spring 2023	BSc Thesis: Modeling and Control of a Seabed Visualizing ROTV using LQR
	Fall 2022	BSc Project: Mini-Inspection Drone Design, Build and Control

AWARDS

I have received the following awards during my studies:

 **Innovation Fund Denmark (1.3M DKK)** (2022-2025) - AI driven optimal control for underwater vehicles.

 **Academic Excellence Scholarship** (2013-2018) – Awarded for outstanding academic performance.

PUBLICATIONS

The following list of publications showcases the outcomes of my research. I have published in leading robotics and control journals and conferences, collaborating with researchers from top institutions and companies worldwide, including Denmark, Germany, Finland, China, and the USA.

1. **Amer, A.**, Falsegar, D., Brodskiy, Y., & Sarabakha, A. (2025). *Modelling of Underwater Vehicles using Physics-Informed Neural Networks with Control*. Submitted to the International Joint Conference on Neural Networks (IJCNN), under review.
2. **Amer, A.**, Mehndiratta, M., Brodskiy, Y., & Kayacan, E. (2025). *Empowering Autonomous Underwater Vehicles Using Learning-based Model Predictive Control With Dynamic Forgetting Gaussian Processes*. IEEE Transactions on Control Systems Technology.
3. Liang, W., **Amer, A.**, Mehndiratta, M., Chen, Z., Yao, B., & Kayacan, E. (2025). *Adaptive Robust Control Integrated With Gaussian Processes for Quadrotors: Enhanced Accuracy, Fault Tolerance and Anti-Disturbance*. IEEE Transactions on Systems, Man, and Cybernetics: Systems.
4. **Amer, A.**, Mehndiratta, M., Sejersen, J.L.F., Pham, H.X., & Kayacan, E. (2023). *Visual Tracking Nonlinear Model Predictive Control Method for Autonomous Wind Turbine Inspection*. 2023 21st International Conference on Advanced Robotics (ICAR), 431-438.
5. **Amer, A.**, Álvarez-Tuñón, O., Uğurlu, H.İ., Sejersen, J.L.F., Brodskiy, Y., & Kayacan, E. (2023). *UNav-Sim: A visually realistic underwater robotics simulator and synthetic data-generation framework*. 2023 21st International Conference on Advanced Robotics (ICAR), 570-576.
6. **Amer, A.**, Álvarez-Tuñón, O., Falsegar, D., Brodskiy, Y., & Kayacan, E. (2023). *MUDROV: A modular underwater defouling ROV for ship propeller cleaning*. Advanced Marine Robotics Workshop, International Conference on Intelligent Robots and Systems (IROS) 2023.
7. **Amer, A.** (2021). *Shape Optimization of a Flapping Wing for the Atalanta Project FWMAV* (Master's thesis). Delft University of Technology.

Best regards,
Abdelhakim Amer