Dr. Eleni Kelasidi

Department of Mechanical and Industrial Engineering, NTNU

Born	December 13, 1982, Georgia
Nationality	Greek
Present position	Professor in Field Robotics, Department of Mechanical and Industrial Engineering, NTNU Senior Research Scientist, Aquaculture Robotics and -Automation Group, SINTEF OCEAN Leader of SINTEF ACE-Robotic Lab - Autonomous and Robotic Aquaculture systems Laboratory, SINTEF Ocean
Affiliation	Mob: (+47) 45185796 E-mail: eleni.kelasidi@ntnu.no, eleni.kelasidi@sintef.no https://www.ntnu.no/ansatte/eleni.kelasidi https://www.sintef.no/en/all-employees/employee/?empId=7467

Education

April 2012– June 2015 — **Doctorate in Engineering Cybernetics**, *Department of Engineering Cybernetics, Norwegian University of Science and Technology*, Norway.

- PhD Thesis: *Modeling, Control and Energy Efficiency of Underwater Snake Robots* (Submitted Aug. 2015, Defense 12/2015).
- Supervisor: Prof. Kristin Y. Pettersen. (url)

Jan. 2009–March 2012 — **Pre-Doc researcher**, *Department of Electrical & Computer Engineering, Division of Systems & Automatic Control, University of Patras,* Greece.

- Research field: *Design and Control of mobile robot with articulated body*.
- Supervisor: Prof. Anthony Tzes. (url)

Sept. 2003–April 2009 — **Diplomate Electrical & Computer Engineering**, Diploma Grade: 7.01/10. *Department of Electrical & Computer Engineering, Division of Systems & Automatic Control*, *University of Patras,* Greece.

- Diploma Thesis: *Integrated robotic odometry system using sensor data fusion.*
- Supervisor: Prof. Anthony Tzes. (url)

June 2003 — High school certificate. Grade 19.2/20. Areopolis, Laconia.
Awards of excellence in 3 out of 3 years of studies.

Academic Experience

Project Experience

2025 - present — **Project Participants of Norwegian Centre for Embodied AI (NCEI),** budget, 255MNOK, project financed from Norwegian Research Council of Norway, where budget is allocated for 2 PhDs working in the domain of Robust Field Autonomy at MTP.

June 2025-present — **Project Manager of** Scientific equipment 2026 – Application for funds from NTNU: MTP – Field Robotics for Exploration, Education, and Research, budget 5MNOK, project funded from NTNU to develop Field Robotic Lab at MTP.

Oct. 2021 - present	**Project Manager of the ResiFarm,** budget 12.924 MNOK, project co-financed by the Research Council of Norway and the industrial partners, where associated Postdoc and PhD budget is included: Resilient Robotic Autonomy for Underwater Operations in Fish Farms.
April 2021 – present	**Project Manager of the CHANGE,** budget 8 MNOK, funded by FRIPRO – Researcher Project / Young Research Talents program, where associated Postdoc budget is included: An underwater robotics concept for dynamically changing environments.
April 2020 – present	**Project Manager of the Fish-Machine Interaction,** budget 8 MNOK, RACE - Development of New Knowledge & Methods for Optimized Operations in Fish Farms, funded by SINTEF Ocean AS where associated PhD budget is included.
Sept. 2023 – Feb 2024	**Project Manager of the NewSense**, budget 1.5MNOK, RACE - New sensor solutions for fish distribution monitoring and robot navigation and inspection in aquaculture, funded by SINTEF Ocean AS.
March 2019 – Dec 2022	**Technical Project Manager of the NetClean 24/7**, budget 13 MNOK, project co-financed by the Research Council of Norway and the industrial partners: Tetherless robot for biofouling prevention and inspection in salmon farming.
Oct. 2020 – Dec 2021	**Project Manager of the AE – AQUAEXCEL 3 EU project**, budget 7.5 MNOK, WP leader of Work Package entitled ''Technological tools for improved experimental procedures''.
Sept. 2020 – Dec 2021	**Project Manager of SINTEF ACE RoboticLab,** budget 0.5 MNOK, RACE - Autonomi i havbruk, Salmar Farming AS.
March 2019 – Nov 2021	**Project Manager of the Autosmolt2025**, budget 14.4 MNOK, project co-financed by the Research Council of Norway and the industrial partners: Autonomous containment- and production systems for smolt and post-smolt production.
June 2018 – Dec. 2020	**Project Manager of the AE - AQUAEXCEL^{2020} EU project**, budget 5 MNOK, WP leader of Work Package entitled ''Virtual laboratories and modelling tools for designing experiments in aquaculture research facilities''.
March 2020 – Oct. 2020	**Project Manager of the AquaTwin,** budget 15 MNOK, project co-financed by the Research Council of Norway and the industrial partners: Aquaculture Digital Twin for advanced insight to improve productivity and control.
Sept. 2019 – April 2020	**Project Manager of Automation in Aquaculture,** budget 1 MNOK, RACE - Autonomi i havbruk, Salmar Farming AS.
Nov. 2018 – Feb. 2020	**Project Manager of CageReporter**, budget 18.1 MNOK, project co-financed by the Research Council of Norway and the industrial partners: Development of technology for autonomous, bio-interactive and high-quality data acquisition from aquaculture net cages.
Feb. 2019 – Feb. 2020	**Project Manager of the AE - AQUAEXCEL^{2020} TNA AquaFlow**, budget 0.4 MNOK, project entitled ''Testing a Distributed Sensor Network for Measuring Flow Field in a Sea Cage''.
Feb. 2019 – Feb. 2020	**Project Manager of the AE - AQUAEXCEL^{2020} TNA FeedControl**, budget 0.4 MNOK, project entitled ''Smart sensor to improve the efficiency of the feeding process in aquaculture''.
Feb. 2018 – Feb. 2020	**Project Manager of the AE - AQUAEXCEL^{2020} TNA U-CAT for Aqua farm**, budget 0.4 MNOK, project entitled ''Using a Biomimetic Underwater Robot (U-CAT) for Biological and Environmental Monitoring inside a Large-scale Aquaculture Sea Cage''.
Jan. 2018 – Feb. 2020	**Researcher at CageReporter (Project Participant)**, budget 18.1 MNOK, project co-financed by the Research Council of Norway and the industrial partners: Development of technology for autonomous, bio-interactive and high-quality data acquisition from aquaculture net cages.
Jan. 2018 – Feb. 2020	**Researcher at Artifex (Project Participant)**, budget 18 MNOK, project co-financed by the Research Council of Norway and the industrial partners: Development of new robot technologies for remotely controlled daily and periodic inspection, maintenance and repair operations from a land-based control centre.

Research Positions

Research Visitor, Autonomous Systems Lab (ASL), ETH (March 2024 – Nov. 2024)

Research Visitor, Massachusetts Institute of Technology (MIT), Sea Grant (Sept. 2023 – Nov. 2023)

Young Researcher Talent, CHANGE - An underwater robotics concept for dynamically changing environments, FRIPRO Young Research Talent program, main scientific supervisor of a PhD and one Postdoc (Apr. 2021 – March 2025).

Postdoc Researcher, *Resident Robot Manipulators for Subsea IMR project*, Future Development and Operations, VISTA - a basic research program in collaboration between The Norwegian Academy of Science and Letters, and Statoil, Department of Engineering Cybernetics, NTNU, Norway (Jan. 2016 – 2018).

PhD Researcher, *SLICE (Snake Locomotion in Challenging Environments) project*, Department of Engineering Cybernetics, NTNU, Norway (Apr. 2012 – June 2015).

Researcher, *Design and Control of mobile robot with articulated body*, Department of Electrical & Computer Engineering, University of Patras, Greece, (Jan. 2009 – March 2012).

Researcher, *Robotic systems for search and rescue missions*, John S. Latsis Public Benefit Foundation, Search and Rescue - Research Projects, (Jan. 2011 – Dec. 2011). **Acquiring one-year self–funding via the Latsis excellence scholarship of the John S. Latsis Public Benefit Foundation.**

Researcher, *Robustness Analysis of Nonlinear System, NICE – Nonlinear control design and evaluation project*, funded by EDA, (Jan. 2011 – Dec. 2011).

Teaching Experience

Professor, *Norwegian University of Science and Technology, Department of Engineering Cybernetics*, Lessons Teaching: Robotics, (August 2025 – Dec. 2025)

Invited Lecturer: Seminar Cycles of the Postgraduate Programme in Marine Science, Technology and Society, organized by NOVA School of Science and Technology (MSTS) under the Blue Growth Program of the EEA Grants, project "MST&S Education Programme, Online, 2022, 2023 *Title – Digitalization, Automation and Robotics in Aquaculture*

Invited Lecturer: Department of Engineering Cybernetics, Experts in Teams- Talk at EiT on Robotic Ocean Waste Cleanup, NTNU, 2022, *Title – Autonomous Operations in Dynamically Changing Environments such as fish farms*

Invited Lecturer: Mundus MIR lecture for Autonomy in subsea operations, Online, 2022, *Title – Autonomy in Aquaculture*

Invited Lecturer, *The Korean Marine Robot Technology Society*, Online Seminar on Fall Conference, Korea, 2021: *Title – Autonomous Operations in Dynamically Changing Environments such as fish farms*

Invited Lecturer, *Department of Electrical and Computer Engineering*, Online Seminar for Control Systems lecture, Aarhus, Denmark, 2021: *Title – Autonomous Operations in Dynamically Changing Environments such as fish farms*

Invited Lecturer, *Seafood Trainee program*, Trondheim, Norway 2021: *Title – Aquaculture Robotics*

Invited Lecturer, *Norwegian University of Science and Technology*, MSc in Marine Coastal Development, TMR 4140: Design of marine production plant, 2020, 2021, 2022, 2023 and 2024, 2025: *Title – Data Acquisition tools, Farming Intelligence and Autonomy*

Lecturer, *Norwegian University of Science and Technology, Department of Engineering Cybernetics*, Lessons Teaching: Nonlinear Control Systems, (July 2016 – Dec. 2016)

Assistant Professor, *Norwegian University of Science and Technology, Department of Engineering Cybernetics*, Lessons Teaching: Nonlinear Control Systems, (June 2015 – Dec. 2015)

Lecturer and Teaching Assistant, *University of Patras, Department of Electrical & Computer Engineering*, Lessons Teaching: Systems and Control I (Senior), (Sept. 2011 – March 2012)

Lecturer and Teaching Assistant, *University of Patras, Department of Electrical & Computer Engineering*, Lessons Teaching: Systems and Control I (Senior) (Sept. 2010 – Feb. 2011)

Lecturer and Teaching Assistant, *University of Patras, Department of Electrical & Computer Engineering*, Lessons Teaching: Analogue and Digital Control Systems I (Junior) (Sept. 2010 – Feb. 2011)

Lecturer and Teaching Assistant, *University of Patras, Department of Electrical & Computer Engineering*, Lessons Teaching: Systems and Control II (Senior) (Feb. 2010 – July 2010)

Lecturer, *College 'IEK AKMI' (Patra), Division of Technician of Automatism Theory and Laboratory*, Lessons Teaching: Sensors Measurements, (Sept. 2010 – July 2010)

Teaching Assistant, *University of Patras, Department of Electrical & Computer Engineering*, Lessons Teaching: Systems and Control I (Laboratory), (Sept. 2009 – Feb. 2010)

Professor, *Private school "Kappa Schools" (Patra)*, Lessons Teaching: Computer Science, (Jan. 2009 – Dec. 2009)

Tutor, *High School Education, Greece*, Lessons Teaching: Developing Implementations in a Programming Environment (2005 – 2006)

Professional Experience

5/2016–7/2016 **Eelume AS**, Software Engineer (20% position), *Development of model of Underwater Snake Robot with thrusters for Eelume prototype in Vortex*, Trondheim, Norway

10/2010–9/2011 **IridaLabs Company**, *Robustness Analysis of Non Linear System, NICE – Non linear control design and evaluation Project, funded by EDA,* Patras Scientific Park, Patras, Greece

2009 – 2011 **University of Patras**, Department of Electrical & Computer Engineering, Patras, Greece. Participation in:

- 2010 – 2011, *Website design, programming and maintenance [www.med2011.org]*, Mediterranean Control Association.
- 9/2010 – 10/2010, *Design and Construction of Three Tank System*, Division of Systems and Automatic Control.
- 2/2010 – 7/2010, *Laboratory - Setups Upgrade. Implementation of a series of 6 laboratory exercises on real-time system identification and control. Upgrade of Laboratory of Systems and Control II course*, Division of Systems and Automatic Control.
- 2/2010 – 7/2010, *Laboratory Setups Upgrade Laboratory of Systems and Control II course*, Division of Systems and Automatic Control.
- 7/2009, *Engineering Training on Informatics and Communication Technologies*, Technical Chamber of Greece, Mechatronics and Embedded Systems.

2009-2011 **Freelancer**, *Website construction: [www.monidekoulou.gr], [www.cafeaula.gr], [www.patrasgas.gr], [www.congressworld-patra.gr], [http://anemos.ece.upatras.gr], [www.aerofilms.gr], [www.sar-robots.upatras.gr].*

2007-2008 **Hellenic Telecommunications Organization (OTE S.A.)**, *Information Provider (remote assistance)*, Patras, Greece.

Research Interests

Robust Field Autonomy, Automation and Robotics dedicated for Aquaculture, Biology and Technology Interaction, Underwater Snake Robots, Biologically Inspired Swimming Robots, Energy Efficiency of Underwater Robots, Hydrodynamic Modeling, Non-Holonomic Robotic Systems, Robotics, Control and Automation Systems, Dynamics Modeling and Nonlinear Control, Autonomous Systems, Modeling and Applications of Pneumatic Artificial Muscles.

Publications

Citations 1801 based on Google Scholar, accessed 15/06/2025
h–index 26 based on Google Scholar, accessed 15/06/2025
h10–index 47 based on Google Scholar, accessed 15/06/2025

Theses

[T.2] **E. Kelasidi**, "*Modeling, Control and Energy Efficiency of Underwater Snake Robots*" PhD Thesis, Department of Engineering Cybernetics, Norwegian University of Science and Technology (NTNU), Norway, Submitted 3/08/2015, Deference 11/12/2015 (Supervisor: Prof. Kristin Y. Pettersen)

[T.1] **E. Kelasidi**, "*Integrated robotic odometry system using sensor data fusion*" Diploma Thesis, Electrical and Computer Engineering Department, University of Patras, Greece, March 2009 (Supervisor: Prof. Anthony Tzes)

Books and Book Chapters

[B.7] M. Xanthidis, N. Karapetyan, E. Kelasidi and I. Rekleitis, **"Trajectory Planning for Underwater Robots"**, Springer Nature, 2024 (To be submitted)

[B.6] B. Haugaløkken, E. Eilertsen, M. Føre, E. Svendsen, M. Aarsland, L.M. Sunde, E. Kelasidi, **"Precision Fish Farming – From Industry 4.0 to Smolt 4.0"**, Seafood 4.0, Elsevier, 2025

[B.5] L. Evjemo, E. Kelasidi, S.J. Ohrem, M. Føre, et. al., **"Aquaculture Robotics - Challenges, opportunities and future prospects and the role of Digital Twin technology and autonomous solutions"**, Springer Nature, 2025

[B.4] M. Føre, M.O. Alver, J.A. Alfredsen, A. Rasheed, T. Hukkelås, H.V. Bjelland, B. Su, S.J. Ohrem, E. Kelasidi, T. Norton and N. Papandroulakis, **"More fish on the double or double the trouble? Challenges and opportunities with Digital twins in aquaculture"**, Springer Nature, 2024

[B.3] E. Kelasidi and E. Svendsen, "**Robotics for Sea-Based Fish Farming**", Springer, Encyclopedia of Smart Agriculture Technologies, 2023.

[B.2] A. Kohl, E. Kelasidi, K.Y. Pettersen and J. T. Gravdahl, "**Model-Based LOS Path-Following Control of Planar Underwater Snake Robots**", Book Chapter in Springer Lecture Notes in Control and Information Sciences, 2017.

[B.1] E. Kelasidi and S. Manesis, "**Pneumatic Artificial Muscles: Modeling and Applications**", 2011, Published by the University of Patras, Publishing Office.

Patent Application

[P.1] EP3204834B1: E. Kelasidi, K. Y. Pettersen, J. T. Gravdahl and P. Liljebäck, "Guidance of Underwater Snake Robots", Granted, European Patent Office, 2022 (EU: Doc Link).
WO2016055408A1: E. Kelasidi, K. Y. Pettersen, J. T. Gravdahl and P. Liljebäck, "Guidance of Underwater Snake Robots", Patent Application No. 1417625.9, Sept. 25 2014 (Pending, Doc LINK).

Journal Publications

[J31] M. Singh, E. Kelasidi, K. Alexis, **"Methods for robust perception in fish farms: Theory and experimental results"**, IJRR, 2025 (To be submitted)

[J30] M. Xanthidis, K. Alexis, E. Kelasidi, **"Active perception for multi-articulated underwater vehicles"**, IEEE RAL, 2025 (To be submitted)

[J29] Q. Zhang, M. Føre, E. Kelasidi, **"Computer vision methods for estimation of fish size and weight"**, Aquaculture, 2025 (To be submitted)

[J28] H.B. Amundsen, E. Katsidoniotaki, M. Føre, and E. Kelasidi, "**Aquaculture Robotics: Adaptive Path Planning Through Real-Time Estimation of the Shape of Flexible Net Pens**", IEEE Transactions on Field Robotics, 2025

[J27] M. Job, D. Botta, L. Ebner, A. Studer, V. Reijgwart, R. Siegwart and E. Kelasidi, "**Leveraging Learned Monocular Depth Prediction for Pose Estimation and Mapping on Unmanned Underwater Vehicles**", Frontier in Robotics and AI, 2025

[J26] Q. Zhang, N. Bloecher, L. Enjemo, M. Føre and E. Kelasidi, **"Farmed Atlantic salmon (Salmo salar L.) avoid intrusive objects in cages: the influence of sound and light",** Springer**,** 2024 (Submitted)

[J25] M. Føre, E. May O'Brien and E. Kelasidi, **"Method for real-time monitoring of fish responses for perception in autonomous underwater vehicles",** Springer**,** 2025 (Submitted)

[J24] H.G. Alvheim, S.M. Jakobsen, M. Føre and E. Kelasidi, **"A Novel Computer Vision Approach for Assessing Fish Responses to Intrusive Objects in Aquaculture"**, Elsevier Computers and Electronics in Agriculture, 2024 (Submitted)

[J23] E. Katsidoniotaki, B. Su, E. Kelasidi and T. Sapsis, **"Multifidelity digital twin for real-time monitoring of structural dynamics in aquaculture net cages"**, Nature Scientific Reports, Special Session in Digital Twins, 2024 (Submitted)

[J22] M. Xanthidis, M. Skaldebø, K. Alexis and E. Kelasidi, **"ResiVis: A Holistic Underwater Motion Planning Approach for Robust Active Perception Under Uncertainties"**, RAL, 2024

[J21] E. Kelasidi, Q. Zhang, L. Evjemo, M. Føre, H.B. Amundsen, N. Bloecher, B. Su, **"Fish-Robot Interaction"**, IEEE Robotics and Automation Magazine, 2024 (To be Submitted)

[J20] E. Kelasidi, K.Y., Pettersen, J. Sverdrup-Thygeson, J.T., Gravdahl and P. Liljebäck, "**An analytical 3D model for control of underwater snake robots**", Bioinspiration and Biomimetics, 2024 (To be Submitted).

[J.19] H.B. Amundsen, M. Føre, S.J. Ohrem, B. Haugaløkken and E. Kelasidi, "**Three-Dimensional Obstacle Avoidance and Path Planning for Unmanned Underwater Vehicles Using Elastic Bands**", IEEE Transactions on Field Robotics, 2024.

[J.18] Q. Zhang, N. Bloecher, L. Evjemo, M. Føre, B. Su, E. Eilertsen, M. Mulelid and E. Kelasidi, **"Farmed Atlantic salmon (Salmo salar L.) avoid intrusive objects in cages: the influence of object shape, size and colour, and fish length"**, Aquaculture, 2024.

[J.17] B. Su, F.O. Bjørnson, A. Tsarau, P.C. Endresen, S. J. Ohrem, M. Føre, J. T. Fagertun, P. Klebert, E. Kelasidi, H.V. Bjelland, **"Towards a holistic digital twin solution for real-time monitoring of aquaculture net cage systems"**, Marine Structures, 2023.

[J.16] B. Su, E. Kelasidi, K. Frank, J. Haugen, M. Føre, M. O. Pedersen, "**An Integrated Approach for Monitoring Structural Deformation of Aquaculture Net Cages**", Ocean Engineering, 2021.

[J.15] E. Kelasidi, S., Moe, K.Y. Pettersen, A. Kohl, P. Liljebäck and J.T. Gravdahl, "**Path Following, Obstacle Detection and Obstacle Avoidance for Thrusted Underwater Snake Robots**", Frontiers in Robotics and AI, 2019.

[J.14] A. Sans-Muntadas, E. Kelasidi, K.Y. Pettersen, and E. Brekke, "**Path planning and guidance for underactuated vehicles with limited field-of-view**", Ocean Engineering, 2019.

[J.13] A. Sans-Muntadas, E. Kelasidi, K.Y. Pettersen, and E. Brekke, "**Learning an AUV docking maneuver with a convolutional neural network**", IFAC Journal of Systems and Control, 2019.

[J.12] E. Kelasidi, A. Kohl, K.Y. Pettersen, and J.T. Gravdahl, "**Study of Locomotion Efficiency and Path Following for Underwater Snake Robot with and without Caudal Fin: Theory and Experiments**", Annual Reviews in Control, 2018.

[J.11] E. Kelasidi, M. Jesmani, K.Y. Pettersen, and J.T. Gravdahl, "**Locomotion efficiency optimization of biologically inspired snake robots**", Applied Sciences, Special Issue entitled "Bio-Inspired Robotics, Vol. 8, No. 1, 2018.

[J.10] E., Kelasidi and K.Y., Pettersen, "**Modeling of underwater snake robots**", Ang Jr., M.H., Khatib, O., Siciliano, B. (Eds.), Encyclopedia of Robotics. Springer, 2018.

[J.9] J. Sverdrup-Thygeson, E. Kelasidi, K.Y. Pettersen and J.T. Gravdahl, "**The Underwater Swimming Manipulator**", IEEE Journal of Oceanic Engineering, 2017.

[J.8] E. Kelasidi, P. Liljebäck, K. Y. Pettersen, and J. T. Gravdahl, "**Integral line-of-sight guidance for path following control of underwater snake robots: Theory and experiments**," in IEEE Transactions on Robotics, Vol. 33, No.3, 2017, pp. 610-628.

[J.7] A. Kohl, E. Kelasidi, A. Mohammadi, M. Maggiore and K.Y. Pettersen, "**Planar Maneuvering Control of Underwater Snake Robots Using Virtual Holonomic Constraints**", Bioinspiration and Biomimetics, Vol. 11, No. 6, 2016.

[J.6] E. Kelasidi, M. Jesmani, K.Y. Pettersen, and J.T. Gravdahl, "**Multi-objective optimization for efficient motion of underwater snake robots**", Springer Artificial Life and Robotics, No. 4, Vol. 21, 2016.

[J.5] E. Kelasidi, P. Liljebäck, K.Y. Pettersen and J.T. Gravdahl, "**Innovation in Underwater Robotics: Biologically Inspired Swimming Snake Robots**", IEEE Robotics and Automation Magazine, Vol. 23, No.1, 2016, pp. 44-62.

[J.4] A. Kohl, K.Y. Pettersen, E. Kelasidi and J.T. Gravdahl, "**Planar Path Following of Underwater Snake Robots in the Presence of Ocean Currents**", IEEE Robotics and Automation Letters, Vol. 1, No. 1, 2016, pp. 383-390.

[J.3] E. Kelasidi, P. Liljebäck, K.Y. Pettersen and J.T. Gravdahl, "**Experimental Investigation of Efficient Locomotion of Underwater Snake Robots for Lateral Undulation and Eel-like Motion Patterns**", Springer Robotics and Biomimetics, Vol. 2, No. 8, 2015.

[J.2] E. Rezapour, K. Y. Pettersen, P. Liljebäck, J. T. Gravdahl, and E. Kelasidi, "**Path Following Control of Planar Snake Robots Using Virtual Holonomic Constraints: Theory and Experiments**", Robotics and Biomimetics, SpringerOpen, 1:3, 2014.

[J.1] E. Kelasidi, G. Andrikopoulos, G. Nikolakopoulos, and S. Manesis, "**A survey on pneumatic muscle actuators modeling**," Journal of Energy and Power Engineering, 6 (9), pp. 1442–1452, 2012.

Conference Publications

[C79] M. Job, D. Botta, L. Ebner, A. Studer, V. Reijgwart, R. Siegwart and E. Kelasidi, "**Robust Localization and Mapping for UUVs operating in industrial scale fish farms**", Aquaculture Europe 2025, Valencia, Spain, 2025

[C78] S.J. Ohrem, B.O.A. Haugaløkken and E. Kelasidi, **"SOLAQUA: SINTEF Ocean Large Aquaculture Robotics Dataset"**, AQ2UASIM workshop in IEEE/RAS International Conference on Robotics and Automation (ICRA), Atlanta, USA, 2025

[C77] A.S. Bjørlo, M. Xanthidis, M. Føre, and E. Kelasidi, **"SIMP: Energy and Time-Efficient Real-Time 3D Motion Planning for Bio-Inspired AUVs"**, IEEE International Conference on Robotics and Automation (ICRA), Atlanta, USA, 2025

[C76] H.B. Amundsen, S. Randeni, R.C. Bingham, C. Civit, B.P. Filardo, M. Føre, E. Kelasidi and M.R. Benjamin, "**Hybrid State Estimation and Mode Identification of an Amphibious Robot**", IEEE International Conference on Robotics and Automation (ICRA), Atlanta, USA, 2025

[C75] M. Xanthidis, M. Skaldebø, K. Alexis and E. Kelasidi, "**ResiVis: Robust Real-Time Active Perception for Complex Autonomous Underwater Vehicles**", IEEE International Conference on Robotics and Automation (ICRA), Atlanta, USA, 2025

[C74] H.B. Amundsen, M. Føre, S.J. Ohrem, B. Haugaløkken and E. Kelasidi, **"Three-dimensional collision avoidance and path planning for unmanned underwater vehicles using elastic bands"**, IEEE International Conference on Robotics and Automation (ICRA), Atlanta, USA, 2025

[C73] M. Xanthidis, H.B. Amundsen, B. Haugaløkken, L. Evjemo, K. Alexis, and E. Kelasidi, "**Addressing the Challenges of Underwater Motion Planning Towards Enabling Autonomous Aquaculture Operations**", IEEE International Conference on Robotics and Automation (ICRA@40), Rotterdam, Netherlands, 2024.

[C72] D. Botta, L. Ebner, A. Studer, V. Reijgwart, R. Siegwart and E. Kelasidi, "**Framework for Robust Localization of UUVs and Mapping of Net Pens**", IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2024), Abu Dhabi, United Arab Emirates, 2024

[C71] L. Evjemo, Q. Zhang, H.G. Alvheim, H.B. Amundsen, M. Føre and E. Kelasidi, "**Biology and Technology Interaction: Study identifying the impact of robotic systems on fish behaviour change in industrial scale fish farms**", IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2024), Abu Dhabi, United Arab Emirates, 2024: (Best paper award)

[C.70] H.B. Amundsen, M. Xanthidis, S.J. Ohrem, M. Føre, and E. Kelasidi, **"Aquaculture field robotics: Applications, lessons learned and future prospects"**, IEEE International Conference on Robotics and Automation (ICRA), IEEE ICRA Workshop on Field Robotics, Japan, 2024

[C.69] H.B. Amundsen, M. Xanthidis, M. Føre and E. Kelasidi, **"Spatiotemporal elastic band for motion planning with fast-moving obstacles"**, 15th IFAC Conference on Control Applications in Marine Systems, Robotics, and Vehicles, (CAMS 2024), Virginia, USA 2024

[C.68] D. Voskakis, E. Kelasidi and N. Papandroulakis **"Modeling and Control of an Underwater Calibration Arm"**, IEEE MED 2024-Mediterranean Conference on Control and Automation, Greece 2024

[C.67] O. Nissen, L.D. Evjemo, S.J. Ohrem, B.O.A. Haugaløkken and E. Kelasidi, **"Framework for Automated Wound Detection and Tracking in Industrial Scale Fish Farms"**, IEEE MED 2024-Mediterranean Conference on Control and Automation, Greece 2024

[C.66] M. Skaldebæ, C. Schellewald, L. Evjemo, H.B. Amundsen, M. Xanthidis and E. Kelasidi, **"Sensing in Sea-Based Aquaculture Settings and Approaches Enabling Underwater Autonomy"**, IEEE MED 2024-Mediterranean Conference on Control and Automation, Greece 2024

[C.65] B. Haugaløkken, O. Nissen, M. Skaldebø, S.J. Ohrem and E. Kelasidi, **"Low-Cost Sensor Technologies for Underwater Vehicle Navigation in Aquaculture Net Pens"**, 15th IFAC Conference on Control Applications in Marine Systems, Robotics, and Vehicles, (CAMS 2024), Virginia, USA 2024

[C.65] E. Katsidoniotaki, B. Su, E. Kelasidi and T. Sapsis, **"Integrating Machine Learning for Real-Time Structural Monitoring of Net Cages"**, ISOPE2024-The 34th International Ocean and Polar Engineering Conference, Rhodes, Greece 2024

[C.64] D. Voskakis, E. Kelasidi and N. Papandroulakis, **"Design and development of underwater robotic arm for automated camera calibration for aquatic environment"**, IEEE 10th International Conference on Automation, Robotics and Applications (ICARA), Athens, Greece 2024

[C.63] H.B. Amundsen, T.F. Olsen, M. Xanthidis, M. Føre, and E. Kelasidi, **"RUMP: Robust Underwater Motion Planning in Dynamic Environments of Fast Moving Obstacles"**, IEEE International Conference on Robotics and Automation (ICRA), Japan, 2024

[C.63] H.G. Alvheim, S.M. Jakobsen, M. Føre and E. Kelasidi, **"Fish Behavior Identification Based on Computer Vision"**, Aquaculture Europe, Copenhagen, 2024.

[C.62] Aya Saad, E. Kelasidi, S. Jakobsen, M. Mulelid and M. Bondø, **"StereoYolo+DeepSORT: A Framework to Track Fish from Underwater Stereo Camera in Situ"**, 17th International Conference on Machine Vision (ICMV), Armenia, 2023.

[C.61] A. Cardaillac, H.B. Amundsen, E. Kelasidi and M. Ludvigsen, **"Application of Maneuvering Based Control for Autonomous Inspection of Aquaculture Net Pens"**, Asian Conference on Intelligent Robots Systems (ACIRS), China, 2023.

[C.60] M. Skaldebø, H.B. Amundsen, B. Su and E. Kelasidi, **"Modeling of Remotely Operated Vehicles (ROVs) for aquaculture applications"**, IEEE International Conference on Mechatronics and Automation (ICMA), China, 2023.

[C.60] W.Y. Chan, M. Ludvigsen and E. Kelasidi**, "Predicting underwater vehicle manipulator system dynamics using time-series methods"**, IEEE Oceans, 2023.

[C.59] H. Amundsen, E. Kelasidi and M. Føre, **"CHANGE - An underwater robotics concept for dynamically changing environments"** Aquaculture Europe, Vienna, 2023.

[C.58] S.M. Jakobsen, Q. Zhang, E. Kelasidi and D. Varagnolo, **"Computer vision methods for fish detection and tracking"** Aquaculture Europe, Vienna, 2023.

[C.57] Q. Zhang, E. Kelasidi, M. Føre and B. Su, **"Deep Learning-based methods for fish behavioural change quantification"** Aquaculture Europe, Vienna, 2023.

[C.56] Q. Zhang, B. Su, M. Føre and E. Kelasidi, **"Real-time simulation and monitoring of fish distribution in aquaculture net cages"** Aquaculture Europe, Vienna, 2023.

[C.55] L. D. Evjemo, M. Mulelid, E. Eilertsen, E. Kelasidi and N. Blöcher, **"Identification of Behaviour of Farmed Atlantic Salmon (SalmoSalar) under the influence of external impact factors"** Aquaculture Europe, Vienna, 2023.

[C.54] M. Xanthidis, E. Kelasidi and K. Alexis, **"ResiFarm: Towards Resilient Robotic Autonomy for Underwater Operations in Fish Farms"** Aquaculture Europe, Vienna, 2023.

[C.53] M. Skaldebø, S.J. Ohrem, E. Kelasidi, H.B. Amundsen and N. Bloecher, **"Framework for autonomous navigation for a permanent resident aquaculture net grooming robot"**, IEEE MED 2023-Mediterranean Conference on Control and Automation, Cyprus, 2023.

[C.52] S.J. Ohrem, L. D. Evjemo, B.O.A. Haugaløkken, H.B. Amundsen and E. Kelasidi, **"Adaptive speed control of ROVs with experimental results from an aquaculture net pen inspection operation"**, IEEE MED 2023-Mediterranean Conference on Control and Automation, Cyprus, 2023.

[C.51] H. Amundsen, E. Kelasidi and M. Føre, **"A sliding mode guidance law for 3D path following"**, 21st European Control Conference (ECC), Bucharest, Romania, 2023.

[C.50] M. Xanthidis, E. Kelasidi and K. Alexis, "**ResiPlan: Closing the Planning-Acting Loop for Safe Underwater Navigation**", IEEE International Conference on Robotics and Automation (ICRA), London, UK, 2023.

[C.49] L.D. Evjemo, E. Eilertsen, E. Kelasidi, N. Bloecher, Q. Zhang and H.B. Amundsen, "**Fish-Machine Interaction**", HAVBRUK, Bergen, 2022.

[C.48] B.O. Haugaløkken, M. Xanthidis, L.D. Evjemo E. Kelasidi, "**Robust autonomy for underwater operations in aquaculture**", HAVBRUK, Bergen, 2022.

[C.47] S.J. Ohrem, E. Kelasidi, H.B. Amundsen, B. Haugaløkken, M. Mulelid and N. Bloecher, "**Project Results from NetClean 24/7 – Permanently Resident Robot for Autonomous Net Cleaning and Inspection**", Aquaculture Europe, Rimini-Italy, 2022.

[C.46] L.D. Evjemo, E. Eilertsen, E. Kelasidi and N. Bloecher, "**Experimental results on the reaction of Atlantic Salmin (SalmoSalar) when Exposed to External Influence Factors: Movement, Shape and Sound**", Aquaculture Europe, Rimini-Italy, 2022.

[C.45] E. Kelasidi, S.J. Ohrem, H.B. Amundsen, B. Haugaløkken, L.D. Evjemo, B. Su, E. Eilertsen, M.O. Pedersen and L.M. Sunde, "**SINTEF ACE Robotic Lab – Automation and Robotics to drive up Efficiency and Minimise Risks in Fish Farms**", Aquaculture Europe, Rimini-Italy, 2022.

[C.44] E. Kelasidi, B. Su, W, Caharija, M. Føre, M. O. Pedersen and K. Frank, "**Autonomous Monitoring and Inspection Operations with UUVs in Fish Farms**", IFAC CAMs, Copenhagen, 2022.

[C.43] B.O. Haugaløkken, H.B. Amundsen and E. Kelasidi, "**Aquaculture Robotics and Digitalization – Increasing Autonomy in Underwater Operations in fish farms**" World Aquaculture, 2022.

[C.42] S.J. Ohrem, W. Caharija, H.B. Amundsen, L.M. Sunde, E. Kelasidi and K. Frank, "**Towards autonomous ROV operations in fish farms - Recent developments in navigation and control**", Aquaculture Europe, 2021.

[C.41] M. Føre, S. Fjæra, S.J. Ohrem, E. Kelasidi, N. Bloecher and H.B. Amundsen, "**Adaptive motion planning and path following for permanent resident biofouling prevention robot operating in fish farms**", IEEE Ocean, 2021.

[C.40] B.O. Haugaløkken, O. Nissen, H.B. Amundsen, M. Føre and E. Kelasidi, "**Modelling and control of a 6 DOF robot manipulator for underwater applications -aquaculture related case studies**", IEEE Ocean, 2021.

[C.39] B.O. Haugaløkken, E. Kelasidi, Mats Mulelid and N. Bloecher, "**Docking Stations for Net-Crawling Underwater Vehicles in Aquaculture Net Pens**", IEEE Ocean, 2021.

[C.38] C. Schellewald, A. Stahl and E. Kelasidi, "**Vision-based pose estimation for autonomous operations in aquacultural fish farms**", Proc. IFAC-PapersOnLine CAMS 2021.

[C.37] S.J. Ohrem, H.B. Amundsen and E. Kelasidi, **"Modelling and control of an underwater biofouling prevention and inspection robot"**, ICAR 2021.

[C.36] S. J. Ohrem, H. L. Seehuus, M. Føre, E. Kelasidi and N. Bloecher, **"Permanently resident robot for autonomous net cleaning and inspection"**, Proc. AQUA Conference organized by World Aquaculture Society, 2021.

[C.35] E. Eilertsen, E. Kelasidi, E. Svendsen, M. Føre and L.M. Sunde, "**Adaptation of the Industry 4.0 principles to realize the next generation of smolt production units**", Proc. AQUA Conference organized by World Aquaculture Society, Cork, Ireland, 2020.

[C.34] E. Kelasidi, B. Su, W. Caharija, K. Frank, MO, Pedersen, M. Føre, C. Schellewald, LM Sunde, "**Autonomous underwater robots for safer and more efficient operations in fish farms**", HAVBRUK2020, Norway, 2020.

[C.33] S.J. Ohrem, E. Kelasidi and N. Bloecher, "**Permanent installert vaskerobot til groeprevensjon og overvåking av merdmiljø**", HAVBRUK2020, Norway, 2020.

[C.32] S.J. Ohrem, E. Kelasidi and N. Bloecher, "**Analysis of a novel autonomous underwater robot for biofouling prevention and inspection in fish farms**", MED 2020- Mediterranean Conference on Control and Automation, France, 2020.

[C.31] E. Kelasidi, B. Su, W. Caharija, K. Frank, M.O. Pedersen, M. Føre, C. Schellewald, L.M. Sunde, "**Autonomous underwater robots for safer and more efficient operations in fish farms**", HAVBRUK2020, Bergen, Norway, 2020.

[C.30] E. Kelasidi, B. Su, M. Føre, K. Frank, W. Caharija, and L. M. Sunde, "**Autonomous Underwater robots for safer and efficient operations in fish farms**", Proc. AQUA Conference organized by World Aquaculture Society, Berlin, Germany, Sep. 29-Oct. 2, 2019.

[C.29] M. Føre Martin, F.O. Bjørnson, M. Alver, G. Senneset and E. Kelasidi, **"E-infrastructure supporting virtual aquaculture experiments"**, Proc. AQUA Conference organized by World Aquaculture Society, Montpellier, France, Aug. 25-29, 2018.

[C.28] W. Caharija, E. Kelasidi, E. I. Grøtli, M. Føre and L. M. Sunde, **"Design of Autonomous Robots for sea-based Aquaculture using the SEATONOMY Method"**, Proc. AQUA Conference organized by World Aquaculture Society, Montpellier, France, Aug. 25-29, 2018.

[C.27] M. F. Amundsen, J.S. Thygeson, E. Kelasidi, and Kristin Y. Pettersen, "**Inverse Kinematic Control of a Free-Floating Underwater Manipulator Using the Generalized Jacobian Matrix**", Proc. European Control Conference, Cyprus, June 12-15, 2018.

[C.26] E. Kelasidi, G. Elgenes, and H. Kilvær, "**Fluid Parameter Identification for Underwater Snake Robots**", Proc. 37th International Conference on Ocean, Offshore & Arctic Engineering, June 17-22, 2018.

[C.25] A. Sans-Muntadas, K.Y. Pettersen, E. Brekke and E. Kelasidi, "**Learning an AUV docking maneuver with a convolutional neural network**", Proc. OCEANS'17 MTS/IEEE Anchorage, Sept. 18-22, 2017.

[C.24] A. Kohl, S. Moe, E. Kelasidi, K.Y. Pettersen, and J.T. Gravdahl, "**Set-based path following and obstacle avoidance for underwater snake robots**", IEEE International Conference on Robotics and Biomimetics (ROBIO), Macau, China, Dec. 5-8, 2017 (IEEE-ROBIO Best Conference Paper Award).

[C.23] E. Kelasidi, K.Y. Pettersen, J.T. Gravdahl, S. Strømsøyen and A.J. Sørensen, "**Modeling and Propulsion Methods of Underwater Snake Robots**", Proc. 1st IEEE Conference on Control Technology and Applications, Kohala Coast, Hawaii, Aug. 27-30, 2017.

[C.22] A. Sans-Muntadas, E. Kelasidi, K.Y. Pettersen and E. Brekke, "**Spiral path planning for docking of underactuated vehicles with limited FOV**", Proc. 1st IEEE Conference on Control Technology and Applications, Kohala Coast, Hawaii, Aug. 27-30, 2017.

[C.21] E. Kelasidi, K.Y. Pettersen, A. Kohl and J.T. Gravdahl, "**An Experimental Investigation of Path Following for an Underwater Snake Robot with a Caudal Fin**", 20th IFAC World Congress, Marine and Maritime Robotics: Innovation and Challenges, Toulouse, France, July 9-14, 2017.

[C.20] J. Sverdrup-Thygeson, E. Kelasidi, K.Y. Pettersen and J.T. Gravdahl, "**The Underwater Swimming Manipulator – A Bio-Inspired AUV**", Proc. 2016 IEEE OES Autonomous Underwater Vehicles, Tokyo, Japan, Nov. 6-8, 2016.

[C.19] E. Kelasidi, K.Y. Pettersen, P. Liljebäck and J.T. Gravdahl, "**Locomotion Efficiency of Underwater Snake Robots with Thrusters**", Proc. International Symposium on Safety, Security and Rescue Robotics, Lausanne, Switzerland, October 23 – 27, 2016.

[C.18] J. Sverdrup-Thygeson, E. Kelasidi, K.Y. Pettersen and J.T. Gravdahl, "**A control framework for biologically inspired underwater swimming manipulators equipped with thrusters**", Proc. 10th IFAC Conference on Control Applications in Marine Systems, Trondheim, Norway, Sep. 13-16, 2016.

[C.17] J. Sverdrup-Thygeson, E. Kelasidi, K.Y. Pettersen and J.T. Gravdahl, "**Modeling of Underwater Swimming Manipulators**", Proc. 10th IFAC Conference on Control Applications in Marine Systems, Trondheim, Norway, Sep. 13-16, 2016.

[C.16] E. Kelasidi, A.M. Kohl, K.Y. Pettersen and J.T. Gravdahl, "**Waypoint guidance control for underwater snake robots exposed to ocean currents**", Proc. 24th Mediterranean Conference on Control and Automation, Athens, Greece, June 21-24, 2016.

[C.15] A. Kohl, K.Y. Pettersen E. Kelasidi and J.T. Gravdahl, "**Analysis of underwater snake robot locomotion based on a control-oriented model**", Proc. 2015 IEEE International Conference on Robotics and Biomimetics (ROBIO 2015), Zhuhai, China, December 6 – 9, 2015.

[C.14] E. Kelasidi, M. Jesmani, K. Y. Pettersen, and J. T. Gravdahl, "**Multi-objective optimization for efficient motion of underwater snake robots**," in Proc. The First International Symposium on Swarm Behavior and Bio-Inspired Robotics (SWARM), Kyoto, Japan, Oct. 28- 30, 2015.

[C.13] A. M. Kohl, E. Kelasidi, K. Pettersen, and J. Gravdahl, "**A control-oriented model of underwater snake robots exposed to currents**", in Proc. IEEE Multi-Conference on Systems and Control, Sydney Australia, Sept. 21-23, 2015.

[C.12] E. Kelasidi, K. Y. Pettersen, and J. T. Gravdahl, "**Energy efficiency of underwater robots**," in Proc. 10th IFAC Conference on Manoeuvring and Control of Marine Craft (MCMC), Copenhagen, Denmark, Aug. 24-26, 2015.

[C.11] E. Kelasidi, K. Y. Pettersen, and J. T. Gravdahl, "**Energy efficiency of underwater snake robot locomotion**," in Proc. 23th Mediterranean Conference on Control and Automation (MED), Torremolinos, Spain, June 16-19, 2015.

[C.10] E. Kelasidi, K. Y. Pettersen, and J. T. Gravdahl, "**Stability analysis of underwater snake robot locomotion based on averaging theory**," in Proc. IEEE International Conference on Robotics and Biomimetics (ROBIO), pp. 574-581, Bali, Indonesia, Dec. 5-10, 2014.

[C.9] E. Kelasidi, K. Y. Pettersen, and J. T. Gravdahl, "**A control-oriented model of underwater snake robots**," in Proc. IEEE International Conference on Robotics and Biomimetics (ROBIO), pp. 753-760, Bali, Indonesia, Dec. 5-10, 2014.

[C.8] E. Kelasidi, K. Y. Pettersen, P. Liljebäck, and J. T. Gravdahl, "**Integral line-of-sight for path-following of underwater snake robots**," in Proc. IEEE Multi-Conference on Systems and Control, pp. 1078 – 1085, Juan Les Antibes, France, Oct. 8-10, 2014.

[C.7] E. Kelasidi, K. Y. Pettersen, and J. T. Gravdahl, "**A waypoint guidance strategy for underwater snake robots**," in Proc. IEEE 22nd Mediterranean Conference on Control and Automation, pp. 1512 – 1519, Palermo, Italy, June 16-19, 2014.

[C.6] E. Kelasidi, K. Pettersen, and J. Gravdahl, "**Modeling of underwater snake robots moving in a vertical plane in 3D**," in Proc. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), pp. 266–273, Chicago, Illinois, Sept. 14-18, 2014.

[C.5] E. Kelasidi, K. Y. Pettersen, J. T. Gravdahl, and P. Liljebäck, "**Modeling of underwater snake robots**," in Proc. IEEE International Conference on Robotics and Automation (ICRA), pp. 4540–4547, Hong Kong, China, May 31-June 7, 2014.

[C.4] E. Kelasidi and A. Tzes. "**Serpentine motion control of snake robots for curvature and heading based trajectory - parameterization**", in Proc. IEEE 20th Mediterranean Conference on Control Automation (MED), pp 536-541, Barcelona, Spain, July 3-6, 2012.

[C.3] P. Giataganas, N. Evangeliou, Y. Koveos, E. Kelasidi, and A. Tzes, "**Design and Experimental Evaluation of an Innovative SMA-Based Tendon-Driven Redundant Endoscopic Robotic**

Surgical Tool", in Proc. 19th Mediterranean Conference on Control and Automation, pp. 1071-1075, Corfu, Greece, June 20-23, 2011.

[C.2] E. Kelasidi, G. Andrikopoulos, G. Nikolakopoulos and S. Manesis, "**A Survey on Modeling Pneumatic Muscle Actuators**", in Proc. 20th IEEE International Symposium on Industrial Electronics ISIE 2011, pp. 1263 - 1269, Gdansk, Poland, June 27-30, 2011

[C.1] E. Kelasidi and A. Tzes, "***Robot Odometry with computer vision***", 2nd Hellenic Robotic Conference, Patras, Greece, December 9-10, 2010.

Invited Talks and Workshops/Demos

[W32] E. Kelasidi Invited Talk with the title **"Resilient robotic systems for autonomous Inspection, Maintenance and Repair (IMR) operations in unstructured and highly dynamic environments"**, NFEA RobotForum2025, Trondheim, Norway, 2025

[W31] E. Kelasidi Invited Talk with the title **"Autonomous Robotic Systems in Aquaculture"**, AQ2UASIM, Planktonic Seminar, Trondheim, Norway, 2025

[W30] E. Kelasidi Invited Talk with the title **"Robust Field Autonomy"**, AQ2UASIM workshop in IEEE/RAS International Conference on Robotics and Automation (ICRA), Atlanta, USA, 2025

[W29] E. Kelasidi Invited Talk with title **"Autonomous Robotic Systems in Aquaculture",** EPFL, Switzerland, 2024.

[W28] E. Kelasidi main organizer of the first Aquaculture dedicated robotic workshop with title **"Autonomous Robotic Systems in Aquaculture: Research Challenges and Industry Needs",** IEEE/RSJ IROS2024, United Arab Emirates, 2024.

[W27] E. Kelasidi Invited Talk with title **"Underwater Robotics Solutions for Autonomous IMR Operations in Fish Farms",** IEEE/RSJ IROS2024 Workshop: Autonomous Robotic Systems in Aquaculture: Research Challenges and Industry Needs, United Arab Emirates, 2024.

[W26] E. Kelasidi Invited Talk with title **"Autonomous Robotic Systems in Aquaculture",** NYU Abu Dhabi, United Arab Emirates, 2024.

[W25] E. Kelasidi Invited Talk with title **"Autonomous Robotic Systems in Aquaculture",** Khalifa University, United Arab Emirates, 2024.

[W24] E. Kelasidi Invited Talk with title **"Autonomous Robotic Systems Operating in Dynamically Changing Environments",** NTNU, Norway, 2024.

[W23] E. Kelasidi Invited Talk with title **"Autonomous Robotic Systems in Aquaculture",** ETH, Switzerland, 2023.

[W22] E. Kelasidi Invited Talk with title **"Autonomous Robotic Systems in Aquaculture",** New York University (NYU), USA, 2023.

[W21] E. Kelasidi Invited Talk with title **"Autonomous Robotic Systems in Aquaculture",** Massachusetts Institute of Technology (MIT), USA, 2023.

[W20] E. Kelasidi Invited Talk with title **"Digitalization and Robotics in Aquaculture",** Massachusetts Institute of Technology (MIT), USA, 2023.

[W19] E. Kelasidi, **"Digitalization and Robotics in Aquaculture",** FFU - Forening for Fjernstyrt Undervannsteknologi, Stavanger, 2023.

[W18] E. Kelasidi, Invited speaker, "**Subsea Inspection and Maintenance in Aquaculture**", SINTEFs industrial day for robotics within inspection and maintenance, 2022

[W17] E. Kelasidi, Keynote industry speaker in CAMs, "**Digitalization and Robotics in Aquaculture**", 14th IFAC Conference on Control Applications in Marine Systems, Robotics, and Vehicles, 2022

[W16] E. Kelasidi, Invited Talk FORTH Research Institute, "**Digitalization and Robotics in Aquaculture**", The Foundation for Research and Technology – Hellas, 2022

[W15] E. Kelasidi, Invited Talk HCMR Research Institute, "**Digitalization and Robotics in Aquaculture**", Institute Marine Biology, Biotechnology and Aquaculture, 2022

[W14] E. Kelasidi, Invited Plenary Talk in RAIC2022 Workshop, "Aquaculture, robotics and AI, Where are we heading? ", Digital Norway, 2022

[W13] E. Kelasidi, Invited Panellist in RAS@EAS Workshop: "Where are we going with monitoring & autonomy", Aquaculture Europe (Virtual Event), 2021

[W12] E. Kelasidi, Invited Talk with title: "**Underwater Drones Operating in Dynamically Changing Environments such as Fish Farms**", Drones Seminar, SINTEF, 2021.

[W11] E. Kelasidi, Invited Panellist in Webinar: "Land-based salmon farming", Undercurrent News, 2020.

[W10] E. Kelasidi, Invited Talk with title: "Can new concepts be used to obtain precise results on the status of the fish and the environment?" TEKMAR, Trondheim, 2019.

[W9] E. Kelasidi, Invited Talk with title: "**Aquaculture operations and underwater robotic systems**", Massachusetts Institute of Technology (MIT), USA, 2019.

[W8] E. Kelasidi, "Autonomous operations in dynamically changing environments using Unmanned Underwater Vehicles (UUVs)", FFU - Forening for Fjernstyrt Undervannsteknologi, Stavanger, 2019.

[W.7] E. Kelasidi, "Improving efficiency and maneuverability of underwater vehicles", Qualisys, Sweden, 2017

[W.6] E. Kelasidi, "Analysing snake robot movements - Qualisys underwater motion capture", Qualisys, Denmark, 2017

[W.5] E. Kelasidi, Invited Talk with title: "**Snake Robots: a success story of NTNU innovation built on more than a decade of basic research**", Female PhD event, IE Faculty, NTNU, 2017.

[W.4] E. Kelasidi, Invited Short Talk with title: **"Underwater Snake Robots - Subsea Operations"**, SSRR Workshop – Unmanned Marine Vehicles for Marine Disasters, Oct. 23, 2016.

[W.3] E. Kelasidi, Invited Talk with title: "**Design, implementation, modeling and control of flexible and highly maneuverable underwater swimming robots**", Centre for Autonomous Marine Operations and Systems (NTNU AMOS) Workshop, 27-28 October, Trondheim, Norway, 2016.

[W.2] E. Kelasidi, Invited Talk with title: "**Underwater Snake Robots**", Marine Workshop organized by Qualisys, 2-3 June, MARINTEK, Trondheim, Norway, 2016.

[W.1] E. Kelasidi, Invited Talk with title: "**Underwater Snake Robots**", Centre for Autonomous Marine Operations and Systems (NTNU AMOS) Workshop, 9-10 February, Oppdal, Norway, 2014.

Reports

[R.16] E. Eilertsen, B.O.A Haugaløkken, M. Føre, M.A. Mulelid, E. Svendsen, L.M. Sunde, E. Kelasidi, **"From Industry 4.0 to Smolt 4.0 - Current Status, Industry Challenges and Directions for Optimized and Sustainable Production"**, Autosmolt2025, SINTEF Ocean, Norway, 2023.

[R.15] J. Haugen, E. Kelasidi, N. Bloecher, H.B. Amundsen, B.O. Haugaløkken and A. Saad, **"Data collection, storing and visualization of data – Software and graphical user interface"**, NetClean 24/7, SINTEF Ocean, Norway, 2023.

[R.14] S.J. Ohrem, O. Nissen, E. Kelasidi and N. Bloecher, **"H2.1 report NetClean 24/7 – Sensor package and accessing data from sensor to FhSim"**, NetClean 24/7, SINTEF Ocean, Norway, 2022.

[R.13] S.J. Ohrem, E. Kelasidi, H.B. Amundsen and N. Bloecher, **"H1.3: Autonomous Functions"**, NetClean 24/7, SINTEF Ocean, Norway, 2022.

[R.12] B.O. Haugaløkken, E. Kelasidi, P.C. Endresen, N. Bloecher and M. Mulelid, **"Underwater docking station"**, NetClean 24/7, SINTEF Ocean, Norway, 2022.

[R.11] S.J. Ohrem, E. Kelasidi, N. Bloecher and H.B. Amundsen, "**Seatonomy applied in operational analysis of an autonomous net cleaning robot - NetClean 24/7 report for work package H1.1: Operational analysis and overall system design**", NetClean 24/7, SINTEF Ocean, Norway, 2022.

[R.10] B.O. Haugaløkken and E. Kelasidi, "**Design of robotic tools for autonomous fish tank operations**", Autosmolt2025, SINTEF Ocean, Norway, 2021.

[R.9] E. Eilertsen, M. Mulelid, E Kelasidi and H.B. Amundsen, "**Self-monitoring rearing tank**", Autosmolt2025, SINTEF Ocean, Norway, 2021.

[R.8] E. Eilertsen, E Kelasidi, H.B. Amundsen, M. Mulelid, E. Lona, M.O. Pedersen and E. Spjøtvold, "**Optimized smolt production and autonomous tank operations**", Autosmolt2025, SINTEF Ocean, Norway, 2022.

[R.7] FO Bjørnson and E Kelasidi, "**D5. 9 Virtual laboratory version 2**", AE - AQUAEXCEL2020¬ EU project, SINTEF Ocean, Norway, 2020.

[R.6] E. Kelasidi, B. Su, E.S. Thorbjørsen, E. Storås, E. Moen, C. Schellewald, M.H. Yip, B.M. Remmen, M. Mulelid, "**CageReporter – Development of technology for autonomous, bio-interactive and high-quality data acquisition from aquaculture net cages**", SINTEF Ocean, Norway, 2020.

[R.5] E.S. Thorbjørnsen and E. Kelasidi, "**Underwater Docking**", CageReporter – Development of technology for autonomous, bio-interactive and high-quality data acquisition from aquaculture net cages, SINTEF Ocean, Norway, 2020.

[R.4] E. Kelasidi, E. Moen, C. Schellewald, M. Yip and B. M. Remmen "**Data capture and real-time data quality analysis**", CageReporter – Development of technology for autonomous, bio-interactive and high-quality data acquisition from aquaculture net cages, SINTEF Ocean, Norway, 2020.

[R.3] B. Su, E, Kelasidi and E.S. Thorbjørnsen, "**Underwater Communication and Position Reference System**", CageReporter – Development of technology for autonomous, bio-interactive and high-quality data acquisition from aquaculture net cages, SINTEF Ocean, Norway, 2020.

[R.2] E. Kelasidi, "**Seatonomy applied in an operational analysis and overall system design for an autonomous underwater vehicle operating in fish cages**", CageReporter – Development of technology for autonomous, bio-interactive and high-quality data acquisition from aquaculture net cages, SINTEF Ocean, Norway, 2020.

[R.1] FO Bjørnson, E Kelasidi, M Føre, G Senneset, MO Alver, "**D5. 5 Virtual laboratory version**", AE - AQUAEXCEL2020¬ EU project, SINTEF Ocean, Norway, 2019.

Selected Popular Science Articles and Interviews

1. E. Kelasidi, https://spectrum.ieee.org/video-friday-cobot-proxie, IEEE Spectrum, 2024
2. A. Lane, M. Føre, M.O. Alver, J.A. Alfredsen, A. Rasheed, T. Hukkelås, H.V. Bjelland, B. Su, S.J. Ohrem, E. Kelasidi, T. Norton and N. Papandroulakis, "Digital Twins in aquaculture: Taking Precision Farming to the next level – Digital Twins in intensive aquaculture: Challenges, opportunities and future prospects", AQUA2024-BlueFood I Green Solutions, 2024
3. E. Kelasidi, How robots affect fish surprises researchers, SINTEF Ocean, 2024
4. E. Kelasidi, Fish Farming: How do Robotics Affect the Fish in Aquaculture?, Ocean Science Technology, 2024
5. E. Kelasidi, Fiskens reaksjon på roboter overrasket forskerne, SINTEF Ocean, 2024
6. E. Kelasidi, Fiskens reaksjon på roboter overrasker, SINTEF Ocean, 2024
7. E. Kelasidi, Fiskens reaksjon på roboter overrasket forskerne, SINTEF Ocean, 2024
8. E. Kelasidi and L. D. Evjemo, Fish-Machine Interaction, Interview at NRK, Distriktsnyheter, MidtNytt, 2024
9. E. Kelasidi and L. D. Evjemo, Fish-Machine Interaction, Interview at NRK Radio, 2024
10. L. D. Evjemo. B. Haugaløkken and E. Kelasidi, Forskere vil være føre var på teknologiens bieffekter, Norsk Fiskeoppdrett, 2023.
11. E. Kelasidi, Har blitt avgjørende for oppdrettsselskapene, Norsk Fiskeoppdrett, 2023
12. E. Kelasidi, FREMTIDENS SMOLTPRODUKSJON handler om automatisering og helhetstenking, NORSK SJØMAT, 2023.
13. B. Haugaløkken and E. Kelasidi, From Industry 4.0 to Smolt 4.0 – Next generation of smolt production by applying the principles of Precision Fish Farming (PFF), SINTEF blog, 2023
14. E. Kelasidi, Autonomous Operations in Fish Farms using Unmanned Underwater Vehicles (UUVs), DYP, 2021
15. E. Kelasidi, How robots can be aquaculture's next caretakers, 2021, SINTEF Ocean, 2021
16. E. Kelasidi, Using robotics to drive up efficiency and minimise risks, SINTEF Blog, 2021
17. E. Kelasidi, H. B. Amundsen, K. Frank, W. Caharija, B. Su, M.O. Pedersen S. J. Ohrem, L. M. Sunde, SINTEF ACE RoboticLab, Norsk Fiskeoppdrett, 2021
18. Revealing hungry salmon with sound waves, Phys.org, 2020

19. How listening to salmon helps feed them more efficiently, New Atlas, 2020
20. Reveals hungry salmon with sound waves, Norwegian SciTech News, 2020
21. Avslører sulten laks med lydbølger, Gemini, 2020
22. Underwater robot designed to keep tabs on fish farms, New Atlas, 2020
23. Meet the aquaculture industry's new maintenance bot, Phys.org, 2020
24. Meet the aquaculture industry's new maintenance bot, Life Technology, 2020
25. Meet the aquaculture industry's new maintenance bot, Fishforecast 2020
26. Meet the aquaculture industry's new maintenance bot, EcoTopical, 2020
27. Meet new maintenance bots in the aquaculture industry, Florida News Times, 2020
28. Meet the aquaculture industry's new maintenance bot, Fish Information & Services, 2020
29. Meet the aquaculture industry's new maintenance bot, Norwegian SciTech News, 2020
30. Møt oppdrettsbransjens nye vaktmester, Gemini, 2020
31. Møt oppdrettsbransjens nye vaktmester, Kyst.no, 2020
32. Meet the aquaculture industry's new maintenance bot, AlphaGalileo, 2020
33. Underwater robot designed to keep tabs on fish farms, New Atlas, 2020
34. ROV performs fish farming functions, Engineering360, 2020
35. Video Friday: MIT Mini-Cheetah Robots Looking for New Homes: Underwater robotic solutions for fish farms, IEEE Spectrum, 2020
36. H. B. Amundsen, W. Caharija, E. Kelasidi, B. Su, S. J. Ohrem, K. Frank, L. M. Sunde, Undervannsrobotikk for havbruksoperasjoner– Hvordan navigere i merd?, Norsk Fiskeoppdrett, Kyst 2020
37. H. B. Amundsen, W. Caharija, E. Kelasidi, B. Su, S. J. Ohrem, K. Frank, L. M. Sunde, M.O. Pedersen, Undervannsrobotikk for havbruksoperasjoner– Mot assistert autonomi under vann, Norsk Fiskeoppdrett, Kyst, 2020
38. Denne roboten svømmer rundt og sjekker merden hele døgnet, Fiskeribladet, 2019
39. Skal sjekke fiskevelferden i merdene med «robotskilpadde», Gemini, 2019
40. Skal sjekke fiskevelferden i merdene med «robotskilpadde», iLaks, 2019
41. Denne robotskilpadden skal passe på laksen, Forskning, 2019
42. Undervannsteknologi tilpasset aquakultur, FFU, 2019
43. Eleni, Kelasidi, Norsk Fiskerinæring, Maskinell notvaktmester (2019)
44. Resident Robot Manipulators for Subsea IMR, VISTA, 2016
45. Improving efficiency and maneuverability of underwater vehicles, Qualisys, 2016

Supervisor of PhD Candidates and Master Students

PhD Candidates

1. Marco Job**, Robust Perception and Localization for UUVs operating in dynamic environments**, main supervisor, NTNU (2025-2028)
2. Md Ether Deowan, **Autonomous Decision-Making for UUVs operating in dynamic environments**, main supervisor, NTNU (2025-2028)
3. Marlon Guttormsen Mathisen, **Design, Modeling and Control for UUVs in real-word scenarios**, main supervisor, NTNU (2025-2028)
4. Herman Biørn Amundsen, **Autonomous vehicles for controlled Fish-Machine Interaction**, main scientific supervisor, NTNU (2021-2025)
5. Mohit Singh, **Resilient multi-modal perception of underwater robots operating in dynamic perceptually-degraded settings such as fish farms**, co-supervisor, NTNU (2022-2025)
6. Rabea Rogge, **Autonomy of Unmanned Surface Vehicles**, co-supervisor, NTNU (2023-2026)
7. Wai Yen Chan, **Underwater Vehicle-Manipulator System (UVMS)for Autonomous Intervention Operations in fish farms**, co-supervisor, NTNU (2021-2023)
8. Jørgen Sverdrup-Thygeson. **Swimming Robot Manipulators for Subsea IMR**, co-supervisor, NTNU (2016-)
9. Anna Kohl. Guidance and Control of Underwater Snake Robots Using Planar Sinusoidal Gaits, co-supervisor, NTNU (2015-2017)

Postdoc Candidates

1. Marios Xanthidis, **Enabling Resilient and Robust Autonomy for Underwater Operations in Aquaculture Settings**, SINTEF (2022-2024)
2. Qin Zhang, **Modelling and monitoring of farmed fish for bio-interactive ROV operations in aquaculture net cage**, NTNU (2022-2025)

Master Students

1. Erik Tjærand Frøland, General Pipeline for Real-time Localization and Mapping for UUVs, NTNU (2025)
2. Helle Stige, Real-life benchmark for Reactive Imitation Learning Policies, NTNU (2025)
3. Herud Zuzanna, Deep Learning Instance Segmentation for Atlantic Salmon Biomass Estimation, ETH (2024)
4. David Botta, Underwater localization and mapping for UUVs operating in fish farms, ETH (2024)
5. Tiruneh Mazengia Fikru, Collision-free motion planning for operations in dynamically changing environments such as fish farms, ETH (2024)
6. Thea Charlotte Andersen Brusevold, Feature-Based Stereo Vision for Estimating Distance between ROV and Net Pen in Aquaculture (2024)
7. Emilia May O'Brien, Machine Learning methods for irregularity identifications in net structures and fish utilizing stereo vision data (2024)
8. August Sletnes Bjørlo, Quaternion-based 3D modeling of multi-articulated underwater robotic systems (2023-2024)
9. Hanne-Grete Alvheim, Compute vision methods for individual fish behaviour identification utilizing stereo vision data (2023)
10. Stian Mjelde Jakobsen, Deep-learning algorithms for estimation of fish-population parameters from stereo vision video data (2022-2023)
11. Marie Gjerden, Modeling and control of underwater snake robots for operations in dynamically changing environments (2022-2023)
12. Torben Olsen, Model Predictive Control-based Path-planning and Obstacle Avoidance for Real-Time Safe Underwater Operations (2022-2023)
13. Anne Marie Mathisen, Motion planning of Unmanned Underwater Vehicles (UUVs) in challenging sea-cage environments using reinforcement learning (2022)
14. Thorset Jonas, Towards Visual Feedback in Salmon Farm Feeding process (2022)
15. Vegard Ur Fjørtoft, Interactive control strategies for autonomous operations of underwater robots in dynamically changing environments (2021-2022)
16. Kristoffer Chi Rong Jin, Deep-learning algorithms for estimation of fish-population parameters from sonar- and video data (2021-2022)
17. Stray Eivind Heldal & Thorset Jonas, Computer vision for automating feeding mechanisms in fish farms (2021)
18. Sverre Fjæra. Optimal and Adaptive Path Planning and Following for Permanent Resident Cleaning Robot Operating in Fish Farms (2020-2021)
19. Oscar Nissen. Automating Tank Operations in Smolt Production - Control of an Underwater Manipulator (2020-2021)
20. Man Ken Michael Cheung. Using visual data to identify the interaction between unmanned underwater vehicles and fish (2020)
21. Pål Hofset Skeide. Automating tank operations in smolt production – A concept study for automating tank cleaning using robotic arms (2020-2021)
22. Håvard Løvseth Seehuus. Control strategies for Autonomous Net Cleaning operations using underwater robotic system (2019-2020)
23. Bjørn Håvard Hoffmann. Path Following and Collision Avoidance for an Underwater Swimming Manipulator (2017-2018)

24. Kenny Duy Luong. Multi-objective Energy Optimization Of Locomotions For Underwater Snake Robot (2017)
25. Mari Galta. Thrust Losses on Underwater Snake Robots with Thrusters (2016-2017)
26. Gard Farstad Elgenes. Fluid parameter identification for modelling of underwater snake robots (2016-2017)
27. Henrik Kilvær. Fluid parameter identification for modelling of underwater snake robots (2016-2017)
28. Morten Fyhn Amundsen. Control of an Underwater Swimming Manipulator, With Compensation for Reaction Forces and Hydrostatic Forces (2016-2017).
29. Simen Strømsøyen. Propulsion methods for under water snake robots - Investigation and simulation using foil for propulsion of a snake robot (2014-2015)
30. Petros Giataganas. Design and control of a redundant robotic tool using smart materials (2010-2011)
31. Nikos Evageliou. Design and control of a redundant robotic tool using smart materials (2010-2011)

Further Research Activities

Associate Editor in: IEEE Robotics and Automation Letters, Frontiers in Robotics and AI, Frontiers in Robotic Control and Systems, IEEE Robotics and Automation Letters (Aerial and Field Robotics Research Area)

TC in: Member of the IFAC Technical Committee 7.2 on Marine Systems (2023 – 2026)

Reviewer in: IEEE Transactions on Control Systems Technology, IEEE Robotics and Automation Magazine (RAM), Ocean Engineering Springer, International Journal of Advanced Robotic Systems, IEEE Transactions on Neural Networks and Learning Systems, Robotica, Control Engineering Practice, Autonomous Robots, Journal of Mechanical Engineering Science, Robotics and Autonomous Systems, IEEE Conference on Control Technology and Applications (CCTA), The World Congress of the International Federation of Automatic Control (IFAC), RAS International Symposium on Safety, Security and Rescue Robotics (SSRR), IFAC Conference on Control Applications in Marine Systems (CAMS), IEEE Conference on Automation Science and Engineering (CASE), IEEE International Conference on Robotics and Automation (ICRA), IEEE/RSJ International Conference on Intelligent Robots (IROS), IEEE Mediterranean Conference on Control and Automation (MED), IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM), American Control Conference (ACC), Conference on Decision and Control (CDC), European Control Conference (ECC), International Conference on Industrial Technology (ICIT), International Conference on Ocean, Offshore & Arctic Engineering (OMAE)

Conference Organizations and Participations

Organization of first workshop related to Autonomous Robotic Systems in Aquaculture, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2024), Abu Dhabi, UAE, 2024

Organization and Chair of a full day Special Session in Aquaculture Europe 2023 (Session: Precision farming - Modelling and control systems)

Co-organization and Chair of Special Session in 14th IFAC Conference on Control Applications in Marine Systems, Robotics, and Vehicles, 2022 (Session: Robotic Inspection, Maintenance and Repair (IMR) of Offshore Structures above and below the Water Surface)

Member of Technical Program Committee (TPC) of the 2016 IEEE International Symposium on Safety, Security and Rescue Robotics, SSRR 2016.

Chair in the Conference on Robotics and Biomimetics (ROBIO 2014) (Session: Underwater Robots).

Chair in the Mediterranean Conference on Control and Automation (MED 2014) (Session: Biologically Inspired Systems and Robotics).

Participation in the organization of Mediterranean Conference on Control and Automation (MED) (Corfu Greece, 2011).

Participation in a Robotic Contest in Spain (**3rd team award**).

PhD opponent/PhD evaluation committee

1. Alberto Dallolio, Design and experimental validation of a control architecture for a wave-propelled USV, Department of Engineering Cybernetics, NTNU, 2022, Supervisor: Professor Tor Arne Johansen
2. Øystein Volden, Cyber-resilient Aided Inertial Navigation: Applications to Ships and Unmanned Surface Vehicles, Department of Engineering Cybernetics, NTNU, 2022, Supervisor: Professor Tor Inge Fossen
3. Jostein Løwer, Snakes on a Plane: Modeling, Estimation and Locomotion for Planar Snake Robots in Cluttered Environments, Department of Engineering Cybernetics, NTNU, December 2023, Supervisor: Professor Øyvind Stavdahl
4. Sriharsha Vishnu Bhat, Hydrobatics: Real-time Control, Simulation and Learning for Underactuated AUVs in Agile Maneuvers, School of Engineering Sciences, KTH Royal Institute of Technology, October 2023, Supervisor: Professor Ivan Stenius
5. Jens Einar Bremnes, Safe Autonomy in Marine Robotics, NTNU, January 2024, Supervisor: Professor Asgeir Sørensen

Awards

Eleni Kelasidi, SINTEF's outstanding research award in 2023 for developing robotics and autonomy in aquaculture as a new research area.

Computer Skills

MatLab /Simulink, NI LabVIEW, Vortex, FhSim, Data bases: Access, Dbase IV, SQL, PHP, DB Design, Synergo, WAMP, C, VISUAL BASIC, BASIC, FORTRAN, PASCAL, JOOMLA, Corel Draw, Adobe Photoshop, Adobe Premiere, Sound Forge 4.5, SolidWorks, Office, LaTex.

Languages

Greek	Native language
English	Cambridge FCE and Michigan ECCE Diploma
Russian	Good
Turkish	Very Good Communications Skills
Norwegian	Basic

Memberships

Member of Institute of Electrical and Electronics Engineers-IEEE (2012)

Member of the Control Systems Society-CSS (2012)

Member of Robotics and Automation Society-RAS (2012)

Member of the Norwegian Society of Chartered Engineers (Tekna) (2016)

Knight of the Order of the Golden Feedback Loop (2015)

Member of the Technical Chamber of Greece (TEE), #121695 (June 21, 2009)