

CURRICULUM VITAE

Professor Kristin Y. Pettersen



Born: 1969-01-28, Fana, Norway
Nationality: Norwegian
Marital status: Married
Present positions: Professor, Department of Engineering Cybernetics, NTNU
Adjunct Professor, Norwegian Defence Research Establishment (FFI)
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Home page: <https://folk.ntnu.no/kyp>

Academic degrees

1996 PhD Engineering Cybernetics, Norwegian University of Science and Technology (NTNU)
1991 MSc Engineering Cybernetics, Norwegian Institute of Technology (NTH)

Work experience

2015-2016	CEO and co-founder	Eelume AS
2014-	Adjunct Professor	Norwegian Defence Research Establishment (FFI)
2013-2023	Key scientist	CoE Autonomous Marine Operations and Systems (NTNU AMOS)
2011-2013	Head of Department	Dept. Engineering Cybernetics, NTNU
2009-2011	Vice-head of Department	Dept. Engineering Cybernetics, NTNU
2010-2013	Director	NTNU Strategic Area ICT Programme of Robotics
2008	Guest Professor	Section for Automation and Control, Aalborg University
2002-	Professor	Dept. Engineering Cybernetics, NTNU
2001-2013	Scientific Advisor	SINTEF ICT
1999	Visiting Fellow	Dept. Mech. and Aerospace Eng., Princeton University
1997-2002	Associate Professor	Dept. Engineering Cybernetics, NTNU
1996-1997	Assistant Professor	Dept. Engineering Cybernetics, NTNU
1993-1996	Research scholar	Dept. Engineering Cybernetics, NTNU/ Research Council of Norway
1992	Teaching assistant	Dept. Engineering Cybernetics, NTNU

Board/Council work

2023-	Vice-President Member Activities	IEEE Control Systems Society - Executive Committee
2022-	Board member	Eelume AS
2022-	Board member (Elected)	IEEE Control Systems Society - Board of Governors
2019-2023	Member	European Control Association (EUCA) Council
2020-2023	Vice-chair	IFAC Membership Committee
2017-2023	Member	IFAC Council
2017-2020	Vice-chair	IFAC Administrative & Finance Committee
2016-2021	Board member	Eelume AS

2012-2014	Board member (Elected)	IEEE Control Systems Society - Board of Governors
2011-2013	Vice-chair	Norwegian Defence Research Establishment (FFI)
2011-2013	Deputy board member	Norwegian Smartgrid Centre
2010-2013	Deputy council member	SINTEF
2010-2017	Board member	NTNU Applied Underwater Robotics Laboratory
2007-2011	Board member	Norwegian Defence Research Establishment (FFI)
2008-2015	Council member	SINTEF Information and Communication Technology
2007-2011	Board member	NTNU/SINTEF Gemini centre of Advanced Robotics
2005-2009	Chair	KEE Control Systems Technology AS (KEEtech)
2005-2009	Council member	Faculty of Information Tech., Math. and Electrical Eng., NTNU
2005-2009	Council member	Dept. Engineering Cybernetics, NTNU
2004-2007	Board member	SINTEF Information and Communication Technology
1999-2005	Board member	Dept. Engineering Cybernetics, NTNU
2002-2005	Board member	Faculty of Information Tech., Math. And Electrical Eng., NTNU

Selected Research Projects

2021-2026	Principal Investigator	Project title: ERC AdG Control of light vehicle-manipulator systems (CRÈME) Funded by the European Research Council. Budget: 2.5 MEUR
2020-2025	Principal Investigator	Project title: NTNU VISTA Center for autonomous robotic operations subsea (CAROS). Funded by The Norwegian Academy of Science and Letters and Equinor. Total budget: 45 MNOK
2020-2023 2023-2025	Key Scientist	Project title: Autonomous Underwater Fleets: from AUVs to AUFs through adaptive communication and cooperation schemes. FRIPRO project funded by the Research Council of Norway. Project partners: NTNU and SINTEF Budget 2020-2023: 14.6 MNOK NFR Complementary funding project 2023-2025: 4 MNOK
2019-2025	Project manager	Project title: Autonomous Robots for Ocean Sustainability (AROS) IKTPLUSS project funded by the Research Council of Norway Project owner: NTNU Total Budget: 21.5 MNOK
2013-2023	Key scientist	Project title: Autonomous Marine Operations and Systems (NTNU AMOS). Centre of Excellence funded by the Research Council of Norway. Project Manager for the project "Marine robotic platforms", 2018 – 2023. Project Manager for Project 4: "Autonomous underwater robotics for mapping, monitoring and intervention", 2013 – 2017. Coordinator for Area 3: Autonomous unmanned vehicles and operations (Projects 3,4,5), 2013 – 2017. Project partners: NTNU, SINTEF, Statoil, DNV. Total Budget 600 MNOK
2011-2015	Project manager	Project title: Snake Locomotion in Challenging Environments (SLICE) FRITEK project funded by the Research Council of Norway Project partners: NTNU and SINTEF Budget: 13.9 MNOK
2009-2014	Project manager	Project title: Control, Information and Communication Systems for Environmental and Safety Critical Systems (CICS) SUP project funded by the Research Council of Norway Budget: 15 MNOK
2009-2014	Key scientist	Project title: Next Generation Robotics for Norwegian Industry (NextGenRob) Project partners: SINTEF, NTNU, Statoil, Hydro, Tronrud Engineering, Glen Dimplex Nordic, SbSeating (HÅG) and RobotNorge Budget: 36 MNOK
2006-2009	Project manager	Project title: Underwater vehicles for synchronization of formations of advanced autonomous underwater vehicles and satellites (AUVSAT) NTNU AVIT project Budget: 1 MNOK
2006-2010	NTNU Project leader	FREE _{sub} NET: A European Research Training Network on Key Technologies for Intervention Underwater Autonomous Vehicles EU Marie Curie Research Training Network, FP6-2005-Mobility-1/RTN Budget NTNU: 2 MNOK

2004-2009 Key scientist Computational Methods in Nonlinear Motion Control ([CM-in-MC](#))
SUP project funded by the Research Council of Norway
Budget: 25 MNOK

Editorial work

2022 Co-Editor-in-Chief for Robotics [Mechatronics](#)

2021-2022 Associate Editor [Field Robotics](#)

2021 Section Editor of "Control of Marine Vessels", [Encyclopedia of Systems and Control](#), Eds. J. Baillieul and T. Samad, Springer Nature Switzerland AG 2021, 2nd edition 2021 ISBN 978-3-030-44183-8.

2021 Co-editor of "Advanced Control Methods in Marine Robotics Applications", *Frontiers in Robotics and AI*, 2021. Editors: Fabio Bonsignorio, Enrica Zereik, Marco Bibuli, Kristin Y. Pettersen and Oussama Khatib.

2019-2022 Senior Editor [IEEE Transactions on Control Systems Technology](#).

2015-2018 Review Editor [Robotic Control Systems](#), Frontiers in Robotics and AI.

2015 Section Editor of "Control of Marine Vessels", [Encyclopedia of Systems and Control](#), Eds. J. Baillieul and T. Samad, Springer-Verlag, London, 2015. ISBN 978-1-4471-5057-2.

2012-2015 Associate Editor [IEEE Control Systems Magazine](#).

2010-2015 Associate Editor [IEEE Transactions on Control Systems Technology](#).

2008-2009 Member of the Editorial Board [Simulation Modelling Practice and Theory](#).

2009-2011 Associate Editor IEEE International Conference on Robotics and Automation, Shanghai, China, 2011, Anchorage, Alaska, 2010, and Kobe, Japan, 2009.

2009 Associate editor IEEE/RSJ International Conference on Intelligent Robots and Systems, St. Louis, USA, 2009.

IPC/Conference organization

- 2022 Awards Co-chair and Senior Program Committee member of the *2022 IEEE/RSJ international conference on Intelligent Robots and Systems (IROS)*, Kyoto, Japan.
- 2021 Invited sessions chair of *2021 European Control Conference*, Rotterdam, the Netherlands.
- 2020 Industry chair of *2020 European Control Conference*, Saint Petersburg, Russia.
- 2019 Senior member of the International Program Committee of the *European Control Conference*, Naples, Italy.
- 2019 IPC member of *2019 IFAC Conference on Control Applications in Marine Systems, Robotics and Vehicles*, South Korea.
- 2018 Senior member of the Program Committee of *IEEE Conference on Decision and Control*, Miami, Florida.
- 2018 Program chair of *2018 IEEE Conference on Control Technology and Applications (CCTA)*, Copenhagen, Denmark.
- 2017 Co-organizer of Workshop on Sensing and Control for Autonomous Vehicles, Ålesund, Norway.
- 2015 IPC member *14th European Control Conference*, Linz, Austria.
- 2014 IPC member and Associate Editor *22nd Mediterranean Conference on Control & Automation*, Palermo, Italy.
- 2014 IPC member *13th European Control Conference*, Strasbourg, France.
- 2011 IPC member *50th IEEE Conference on Decision and Control and European Control Conference*, Orlando, Florida.
- 2010 IPC member *7th IFAC Symposium on Intelligent Autonomous Vehicles*, Lecce, Italy.
- 2010 IPC member *1st Virtual Control Conference*.
- 2009 IPC member *8th IFAC Conference on Manoeuvring and Control of Marine Craft*, Guarujá, Brazil.
- 2006 IPC member *7th IFAC International Conference on Manoeuvring and Control of Marine Craft*, Lisbon.
- 2006 Co-organizer of Workshop on Group Coordination and Cooperative Control, Tromsø, Norway.

Awards/Honours

- 2023 Fellow of the AAIA.
- 2021 European Research Council Advanced Grant, ERC-2020-AdG.
- 2021 Recipient of the triennial NTNU Award for Outstanding Research and Artistic Activities
- 2020 Recipient of the [2020 IEEE CSS Hendrik W. Bode Lecture Prize](#), for leadership in fundamental research, development and commercialization of marine robotics.
- 2020 Årets DigIT-kvinne (DigIT Woman of the Year).
- 2019 [Distinguished Lecturer](#) of the IEEE Control Systems Society, Jan 2019 – Dec. 2022.
- 2018 Member of the Academy of the Royal Norwegian Society of Sciences and Letters - [DKNVS](#).
- 2017 Fellow of the IEEE.
- 2017 [IEEE Transactions on Control Systems Technology Outstanding Paper Award](#), 2017 for the paper: W. Caharija, K.Y. Pettersen, M. Bibuli, P. Calado, E. Zereik, J. Braga, J.T. Gravdahl, A.J. Sørensen, M. Milovanovic and G. Bruzzone, "Integral Line-of-Sight Guidance and Control of Underactuated Marine Vehicles: Theory, Simulations and Experiments", *IEEE Transactions on Control Systems Technology*, Vol. 24, No. 5, 2016, pp. 1623-1642.
- 2017 IEEE-ROBIO 2017 Best Conference Paper Award for the paper: A.M. Kohl, S. Moe, E. Kelasidi, K.Y. Pettersen and J.T. Gravdahl, "Set-based path following and obstacle avoidance for underwater snake robots", Proc. 2017 IEEE Int. Conf. on Robotics and Biomimetics, Macau, China, Dec. 5-8, 2017.
- 2016 Eelume AS awarded "Subsea Upcoming Company of the Year", by GCE Subsea.
- 2013 Appointed member of the Norwegian Academy of Technological Sciences – [NTVA](#).
- 2006 [IEEE Transactions on Control Systems Technology Outstanding Paper Award](#), for the paper: K.Y. Pettersen, F. Mazenc and H. Nijmeijer, "Global Uniform Asymptotic Stabilization of an Underactuated Surface Vessel: Experimental Results", *IEEE Transactions on Control Systems Technology*, Vol. 12, No. 6, Nov. 2004.
- 2004 Senior member of the IEEE.
- 1993 Personal Doctoral Research Fellowship, Research Council of Norway.

Plenary and Keynote lectures

- 2023 From snake robotics research to a new class of marine robots, R.T. Chien Distinguished Lecture, University of Illinois, March 23, 2023.
- 2023 Snake robots and the power of nonlinear control, Plenary lecture at the 12th IFAC Symposium on Nonlinear Control Systems, Canberra, Australia, 4-6 January, 2023.
- 2022 [Snake robots, and how snake robots research led to a new class of marine robots](#), *IEEE WiE Extraordinary Women Extraordinary Science Seminar Series*, September 30, 2022.
- 2021 Snake robots – bioinspiration gives efficient robots for ocean exploration. IEEE CSS Distinguished Lecture at the IEEE CSS Colombia Chapter and Plenary lecture at the IEEE Colombian Conference on Automatic Control, October 19, 2021.
- 2020 Snake robots. Bode Lecture at *the 59th IEEE Conference on Decision and Control*, Online/Jeju Island, Republic of Korea, 14-18 December, 2020.
- 2020 Snake robots – bioinspiration gives efficient robots for ocean exploration. IEEE CSS Distinguished Lecture at the IEEE CSS Bangalore Chapter, India, September 14, 2020.
- 2019 Snake robot control. Plenary lecture at Indian Control Conference (ICC), Hyderabad, India, December 18-20, 2019.
- 2019 Snake robots moving on land and exploring the oceans. Keynote lecture at IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Macau, China, November 4-8, 2019.
- 2019 Snake robot control. Plenary lecture at the joint IFAC Conference on Control Applications in Marine Systems, Robotics, and Vehicles (CAMS) and IFAC Workshop on Robot Control (WROCO), Daejeon, Korea, September 18-20, 2019.
- 2019 Snake robots exploring the oceans. Keynote lecture at the Big Challenge Festival, Trondheim, Norway, June 17-19, 2019.
- 2018 Underwater Swimming Manipulators. Keynote lecture at the 5th Workshop on EU-funded Marine Robotics and Applications (EMRA'18), Limerick, Ireland, June 12-13, 2018.
- 2017 Snake Robots: from Biology, through University, towards Industry. Plenary lecture at IFAC World Congress, Toulouse, France, July 9-14, 2017.
- 2016 Snake Robots – Swimming snake robots – a bio-inspired solution for subsea inspection and intervention. Plenary lecture at IEEE International Symposium on Safety, Security, and Rescue Robotics (SSRR), Lausanne, Switzerland, October 23-27, 2016.
- 2015 Snake Robots – A solution for firefighting, search and rescue, and subsea IMR operations. Distinguished Lectures Speaker at University of Toronto, Canada, October 22, 2015. <http://www.ece.utoronto.ca/about/distinguished-lectures/>
- 2015 Swimming manipulators – a bio-inspired underwater robotic solution. Plenary lecture at 10th IFAC Conference on Manoeuvring and Control of Marine Craft (MCMC), Copenhagen, Denmark, August 24-26, 2015.
- 2013 Snake Robots - From Biology to Nonlinear Control. Semi-Plenary lecture at IFAC Symposium on Nonlinear Control Toulouse, France, September 4-6, 2013.

Membership in Academic and Professional Organizations and Committees

- 2023/24 Member of the Board of Electors for Professorship of Control Engineering, University of Cambridge
- 2023- Member of the IEEE CSS Long Range Planning Committee
- 2022 Thematic expert in the evaluation of the Vinnväxt Automation Region, Vinnova/SWECO 2022
- 2022, -23 Member of the [IEEE CSS Antonio Ruberti Young Researcher Prize](#) Committee
- 2022, -23 Member of SINTEF Digital's senior research scientist promotion committee
- 2022 Thematic expert in the evaluation for the competence centre *Linköping Center for Sensor Informatics and Control* (LINK-SIC) at University of Linköping, SWECO, 2022
- 2021- Member of [IFAC Technical Committee on Nonlinear Control Systems](#)
- 2021- Member of the Review Panel of NCCR Automation, The Swiss National Science Foundation (SNSF)
- 2021 Member of the Review Panel for evaluation of the Department of Information Technology and Electrical Engineering (D-ITET), ETH
- 2021 Member of the international expert panel of Research Pair proposals, Digital Futures, KTH
- 2020 Member of the [IFAC Harold Chestnut Textbook Prize](#) committee 2018-2020
- 2018-20 Member of the IFAC Task Force on Robot Control
- 2018-20 Member of the IFAC Task Force on Diversity & Inclusion
- 2015-23 Member of [IFAC Technical Committee on Mechatronics](#)

- 2015 Member of the [IEEE CSS TCST Outstanding Paper Award](#) Committee
- 2014 Member of [European Research Council Consolidator Grants Evaluation Panel](#) PE7, Systems and Communication Engineering
- 2014 Member of the Evaluation Committee of [the ARGOS challenge](#) Total/Agence Nationale de la Recherche (ANR)
- 2012-16 Member of the management team of NTNU IME Lighthouse Project Robotics.
- 2011-16 Member [IEEE Robotics and Automation Society Technical Committee on Space Robotics](#).
- 2009-13 Member of the management team of NTNU Strategic Area ICT, [TSO ICT](#).
- 2009 - Member [IEEE Robotics and Automation Society Technical Committee on Marine Robotics](#).
- 2006-11 Member of [IFAC Technical Committee on Nonlinear Control Systems](#).
- 2003/04 Member of Research Council of Norway Committee developing a Strategic Plan for Information and Communication Technology [Strategic plan](#).
- 1993- [IEEE: Institute of Electrical and Electronics Engineers](#) (Senior member since 2004)
- 1993- [Norwegian Society of Automation \(NFA\)](#), the Norwegian branch of the [International Federation of Automatic Control \(IFAC\)](#).
- 1992- Member of the [Norwegian Society of Chartered Engineers \(Tekna\)](#)

Awards students

- 2023 Erlend A. Basso, awarded *IFAC NOLCOS 2022+ Young Author Award*, at the 12th IFAC Symposium on Nonlinear Control Systems.
- 2022 Markus H. Iversflaten, awarded *IFAC CAMS 2022 Young Author Award*, at the 14th IFAC Conference on Control Applications in Marine Systems, Robotics and Vehicles.
- 2019 Erlend A. Basso was awarded *Best Master thesis 2019* by Norwegian Society of Electrical and Automatic Control, the Norwegian branch of the [International Federation of Automatic Control \(IFAC\)](#), for his Master's thesis "Dynamic Task Priority Control of Articulated Intervention AUVs. Using Control Lyapunov and Control Barrier Function based Quadratic Programs".
- 2018 Walter Caharija was awarded the [2017 SINTEF Award for Outstanding Research](#) for his PhD research on marine control systems.
- 2014 Filippo Sanfilippo, awarded the *2014 IEEE International Conference on Information and Automation Best Student Paper Award* for the paper, "JOpenShowVar: an Open-Source Cross-Platform Communication Interface to Kuka Robots" by F. Sanfilippo, M. Fago, L.I. Hatledal, K.Y. Pettersen and H. Zhang.
- 2012 Walter Caharija, awarded the *2012 IFAC Conference on Manoeuvring and Control of Marine Craft Best Student Paper Award* for the paper "Relative Velocity Control and Integral LOS for Path Following of Underactuated Surface Vessels" by W. Caharija, M. Candeloro, K.Y. Pettersen and A.J. Sørensen.
- 2011 Pål Liljebäck, awarded the *2011 ExxonMobil prize for best doctoral dissertation at NTNU* for his thesis: [Modelling, Development, and Control of Snake Robots](#), NTNU thesis 2011:70.
- 2007 Øystein Engelhardttsen, awarded *Best Master thesis 2007* by [Norwegian Society of Automation \(NFA\)](#), the Norwegian branch of the [International Federation of Automatic Control \(IFAC\)](#), for his Master's thesis "3D AUV Collision Avoidance".
- 2005 Even Børhaug, awarded *Best Master thesis 2005* by [Norwegian Society of Automation \(NFA\)](#), the Norwegian branch of the [International Federation of Automatic Control \(IFAC\)](#) for his Master thesis "Cross-track maneuvering and way-point control of underactuated AUVs in particular and mechanical systems in general".

Orders/Societies

- 2004 - Grand Master of the Order of the Golden Feedback Loop
- 1996 - Knight of the Order of the Golden Feedback Loop
- 1987 - Member of the [Sct. Omega fraternity](#), NTH/NTNU

Patents

WO2016120071: K.Y. Pettersen, P. Liljebäck, A. Sørensen, Ø. Stavadahl, J.T. Gravdahl F. Lund and A. Transeth, "Underwater manipulator arm robot", Patent granted in WO EP US JP KR AU BR CA DK ES GB PL PT SG.

EP3204834A1: K.Y. Pettersen, P. Liljebäck, E. Kelasidi and J.T. Gravdahl, "Guidance of underwater snake robots", EU.

Current PhD students

1. Harald Minde Hansen. Hyper-redundant continuum robots for maintenance in Big Science Facilities.
2. Ivan Gushkov. Energy autonomous AIAUVs.
3. Torje Nysæther. Vision-based Autonomous Docking and Intervention Operations.
4. Mads Erlend Bøe Lysø. Interaction control of light vehicle-manipulator systems.
5. Jan Inge Dyrhaug. Interaction control of light vehicle-manipulator systems.
6. Erling Tveter. Interaction control of light-weight vehicle-manipulator systems.
7. Bjørn Kåre Sæbø. Motion planning and control of light-UVMS.
8. Markus H. Iversflaten. Cooperative control for joint observation and intervention tasks.
9. Gianluca d'Antuono. Hyper-redundant robots for maintenance in Big Science Facilities.
10. Eirik Lothe Foseid. Robust motion planning and control of AIAUVs.
11. Hareesh Chitikena (co-advised). Modular multi-terrain self-reconfigurable snake robots.
12. Casper J. Potter (co-advised). Bio-inspired flow sensing for articulated intervention autonomous underwater vehicles.
13. Simon A. Hoff. Communication-aware path planning for autonomous underwater fleets.
14. Irja Gravadahl (co-advised). Hybrid obstacle-aided locomotion control of snake robots.
15. Aurora Haraldsen. Collision avoidance for autonomous vehicles in dynamic environments.
16. Carina Norvik (co-advised). Bioinspired fins for articulated autonomous underwater vehicles.
17. Marianna Wrzos-Kaminska. Free-floating intervention operations using articulated intervention-AUVs.

Graduated PhD students

1. Amer Orucevic (2023) (Co-supervisor). Efficient Propulsion and Practical Stabilization of Underwater Snake Robots, [NTNU thesis 2023:429](#).
2. Josef Matouš (2023). Cooperative Control of Formations of Underwater Vehicles, [NTNU thesis 2023:347](#).
3. Katrine Seel (2023) (Co-supervisor). Learning for Model Predictive Control, [NTNU thesis 2023:261](#).
4. Henrik M. Schmidt-Didlaukies (2023) (Co-supervisor). Modeling and Hybrid Feedback Control of Underwater Vehicles, [NTNU thesis 2023:130](#).
5. Erlend A. Basso (2022). Nonlinear and Hybrid Feedback Control of Marine Vehicles and Multirotors, [NTNU thesis 2022:373](#).
6. Ida-Louise Borlaug (2020). Robust Control of Articulated Intervention-AUVs using Sliding Mode Control, [NTNU thesis 2020:345](#).
7. Martin Syre Wiig (2019). Collision Avoidance and Path Following for Underactuated Marine Vehicles, [NTNU thesis 2019:103](#).
8. Albert Sans-Muntadas (2018). Navigation and Guidance tools for docking underactuated AUVs, [NTNU thesis 2018:185](#).
9. Michael R.P. Ragazzon (2018) (Co-supervisor). Parameter Estimation in Atomic Force Microscopy, [NTNU thesis 2018:146](#).
10. Anna Magdalena Kohl (2017). Guidance and Control of Underwater Snake Robots Using Planar Sinusoidal Gaits, [NTNU thesis 2017:292](#).
11. Claudio Paliotta (2017). Control of Under-actuated Marine Vehicles, [NTNU thesis 2017:240](#).
12. Dennis J.W. Belleter (2016). Control of Underactuated Marine Vehicles in the Presence of Environmental Disturbances, [NTNU thesis 2016:337](#).
13. Signe Moe (2016). Guidance and Control of Robot Manipulators and Autonomous Marine Robots, [NTNU thesis 2016:322](#).
14. Eleni Kelasidi (2015). Modeling, Control and Energy Efficiency of Underwater Snake Robots, [NTNU thesis 2015:140](#).
15. Filippo Sanfilippo (2015). *Alternative and Flexible Control Methods for Robotic Manipulators*, [NTNU thesis 2015:192](#).
16. Daniel de Almeida Fernandes (2015) (Co-supervisor). *An Output Feedback Motion Control System for ROVs: Guidance Navigation and Control*, [NTNU thesis 2015:122](#).
17. Ehsan Rezapour (2015). *Model-based Locomotion Control of Underactuated Snake Robots*, [NTNU thesis 2015:46](#).
18. Walter Caharija (2014). *Integral Line-of-Sight Guidance and Control of Underactuated Marine Vehicles*, [NTNU thesis 2014:316](#).
19. Magnus Christian Bjerkeng (2013). *Sensor-based Control of Industrial Manipulators*, [NTNU thesis 2013:240](#).
20. Johannes Schrimpf (2013) (Co-supervisor). *Sensor-based Real-time control of Industrial Robots*, [NTNU thesis 2013:225](#).
21. Arnfinn Aas Eielsen (2012) (Co-supervisor). *Topics in Control of Nanopositioning Devices*, [NTNU thesis 2012:315](#).
22. Mernout Burger (2011). *Disturbance Rejection using Conditional Integrators*, [NTNU thesis 2011:4](#).

23. Pål Liljebäck (2011). *Modelling, Development, and Control of Snake Robots*, [NTNU thesis 2011:70](#).
24. Pål Johan From (2010) (Co-supervisor) *Off-Shore Robotics – Robust and Optimal Solutions for Autonomous Operations*, [NTNU thesis 2010:96](#).
25. Anne Karin Bondhus (2010). *Leader-Follower Synchronization of Mechanical Systems*, [NTNU thesis 2010:58](#).
26. Even Børhaug (2008). *Nonlinear Control and Synchronization of Mechanical Systems*, [NTNU thesis 2008:298](#).
27. Jon Erling Gorset Refsnes (2008) (Co-supervisor). *Nonlinear Model-Based Control of Slender Body AUVs*, NTNU thesis 2008:60.
28. Aksel Andreas Transeth (2008). *Modeling and Control of Snake Robots*, [NTNU thesis 2008:2](#).
29. Erik Kyrkjebø (2007). *Motion Coordination of Mechanical Systems: Leader-Follower Synchronization of Euler-Lagrange Systems using Output Feedback Control*, [NTNU thesis 2007:60](#).

Post Docs

1. Josef Matouš, 2023-
2. Henrik M. Schmidt-Didlaukies, 2023-
3. Erlend A. Basso, 2022-
4. Anna Kohl, 2017-2018.
5. Eleni Kelasidi, 2016-2018.
6. Konstantin Amelin, 2015-2016.
7. Pål Liljebäck, 2011-2015.
8. Christian Holden, 2011-2013.
9. Erik Kyrkjebø, 2007-2008.
10. Alexey Pavlov, 2005-2007.

Dissemination

- [What's lurking in the depths? Snake robots!](#) By Emma Steer, The List, March 2023, pp. 36-37
- [Snake robots](#). IEEE Control Systems Society Day, October 19, 2022.
- [Snake robots, and how snake robots research led to a new class of marine robots](#). IEEE WIE Extraordinary Women Extraordinary Science Seminar Series, September 30, 2022.
- [A new class of marine robots](#) Trondheim Tech Port Conference, Norway, March 28, 2022.
- [Snakes and Ladders - What The Duck?!](#) By Dr. Ann Jones, ABC Radio National, March 5, 2022.
- 'Eeluminating' careers: Prof. Kristin Y. Pettersen about self-trust, ambition and work-family balance, By Ruxandra Lupu: [Women in Blue podcast](#), November 29, 2021.
- [Norwegischer Roboter wird zum Filmstar](#), Wissen.de, December 9, 2021.
- Slangerobot blir filmhelt, By Live Oftedahl, [Gemini](#). October 26, [Forskning.no](#) October 29, 2021.
- [Snake robots exploring the oceans](#), NRK TV, June 19, 2019.
- [Slangeroboter utforsker havet](#), By Thomas Høstad, NTNU Big Challenge Science Festival, Trondheim, Norway, June 16 – 19, 2019.
- [Kristin Y. Pettersen \[People in Control\]](#), Control Systems Magazine, Vol. 37, No. 4, 2017, pp. 26-27.
- [A giant subsea snake robot](#), By Steinar Brandslet, Gemini, Starburst Special Edition, June 2017.
- [水中で魚の健康診断や石油企業のお手伝い、泳ぐへビ型ロボット／ノルウェー](#). By Asaki Abumi, Yahoo!JAPAN, 2017-06-27.
- [Hun har utviklet slangeroboter og jobber med å lukeparkere skip](#), By Joachim Seehusen, Teknisk Ukeblad, 2017-03-12.
- [This terrifying robot snake could repair machines at the bottom of the ocean](#), Mashable, 2016-11-18.
- [See snake](#). By Russell McCulley, Upstream Technology, June, 2016, pp. 20-22.
- [Simplified Subsea Intervention with an Electric Eel](#). By Gunnar Buvik, GCE Subsea, 2016-06-15.
- [Slangeroboter utfører oppdrag i havet](#), By Egil M. Opland, Adressa and Adressa.no, 2016-04-19.
- [Slangerobot på havbunnen](#), By Morten Andersen, NRK Dagsrevyen 21, 2016-04-18.
- [Denne slangeroboten skal bli Statoils "vaktmester" på havbunnen](#), By Marius Lorentzen, E24, 2016-04-18.
- [Slangeroboter skal revolusjonere vedlikeholdet subsea](#). By Ina Andersen, Teknisk Ukeblad, 2016-04-19.
- [Slangeroboter forbedrer subsea inspeksjon og vedlikehold](#). By Kristin Y. Pettersen and Pål Liljebäck. DYP Magasinet, No. 2, 2016, pp. 18-19.
- [Our swimming snake robots presented in different media](#).
- [Our ground snake robots presented in different media](#).
- [Dronene kommer](#), Forskningsrådets bilag om Forskningsdagene, VG 2013-09-17, side 7.
- [Fremtiden er her](#). Bilag om teknisk kybernetikk i Dagens Næringsliv 6. mars 2013.
- [AMOS skal gjøre verden smartere](#), By Svein Inge Meland, Adresseavisen 2013-02-26.
- [Nysgjerrig på roboter](#). By Magnus Holm. Mangschou forlag, May 2012. ISBN 978-82-8238-050-8.

- [Denne roboten kan gjøre egne valg](#). Dagbladet Magasinet, 2009-09-15.
- [Robotbarna](#). By Åse Dragland. Gemini No. 3, 2009.
- [Snake robot uses obstacles for locomotion](#). By Mason Inman. New Scientist, March 2008.
- [Il serpente meccanico](#). By Alessio Balbi. TV Repubblica, 2008-03-05.
- [Reparere...transportere...patroljere](#). By Hege J. Tunstad. Gemini No. 1, 2008
- Myk professor. By Heidi Bolstad. Adresseavisen Ukeadressa, 2007-02-17.
- Fartøy i flokk og formasjon. By Hege J. Tunstad. Gemini No. 5, 2006, and in Byens Næringsliv 2006-12-05. Koreografi for båt. Forskning.no, 2007-01-05.
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1. H. Chitikena, I. Gravdahl, K.Y. Pettersen, A. Mohammadi, F. Sanfilippo, Ø. Stavdahl and S. Ma, "Adaptive Manoeuvring Control for Planar Snake Robots in Uncertain Friction Environments", *Proc. 2024 American Control Conference*, Toronto, Canada, July 8-12, 2024.
2. A. Haraldsen, M.S. Wiig, A.D. Ames and K.Y. Pettersen, "Safety-Critical Control of Nonholonomic Vehicles in Dynamic Environments using Velocity Obstacles", *Proc. 2024 American Control Conference*, Toronto, Canada, July 8-12, 2024.
3. S.A. Hoff, J. Matouš, D. Varagnolo and K.Y. Pettersen, "Communication-aware NSB formation control for networks of AUVs", *Proc. 22nd European Control Conference*, Stockholm, Sweden, June 24-28, 2024.
4. E.L. Foseid, E.A. Basso, H. Schmidt-Didlauskies, K.Y. Pettersen and J.T. Gravdahl, "A Hierarchical Model Predictive Control Method For Dynamic Task-Priority Control Using Control Lyapunov Functions", *Proc. 22nd European Control Conference, Stockholm*, Sweden, June 24-28, 2024.
5. E.S. Lie, J. Matouš and K.Y. Pettersen, "Formation Control of Underactuated AUVs Using the Hand Position Concept", *Proc. 62nd IEEE Conference on Decision and Control*, Marina Bay Sands, Singapore, Dec. 13-15, 2023.
6. H. Das, B.K. Sæbø, K.Y. Pettersen and C. Ott, "Hardware-in-the-Loop Simulation of Vehicle Manipulator Systems for Physical Interaction Tasks", *Proc. 2023 IEEE/RSJ International Conference on Intelligent Robots and Systems*, Detroit, USA, Oct. 1-5, 2023.
7. T. Nysæther, K.Y. Pettersen and J.T. Gravdahl, "Hierarchical compliance-control-based docking of an UVMS", *Proc. OCEANS, Mississippi Gulf Coast*, Sep. 25-28, 2023.
8. I. Gushkov, A. Orucevic, K.Y. Pettersen, W. Yao and J.T. Gravdahl, "Vector Field Path Following of Static Sinusoidal Paths for Underwater Snake Robots", *Proc. 7th IEEE Conference on Control Technology and Applications*, Bridgetown, Barbados, Aug. 16-18, 2023.
9. A. Haraldsen, M.S. Wiig and K.Y. Pettersen, "Dynamic Obstacle Avoidance for Nonholonomic Vehicles using Collision Cones: Theory and Experiments", *Proc. 7th IEEE Conference on Control Technology and Applications*, Bridgetown, Barbados, Aug. 16-18, 2023.
10. G. D'Antuono, K.Y. Pettersen, L.R. Buonocore, J.T. Gravdahl, M. Di Castro, "Dynamic model of a tendon-actuated snake robot using the Newton-Euler formulation", *Proc. 22nd IFAC World Congress*, Yokohama, Japan, July 9 – 14, 2023.
11. M.E.B. Lysø, E.I. Grøtli and K.Y. Pettersen, "Torque-Minimizing Control Allocation for Overactuated Quadrupedal Locomotion", *Proc. 22nd IFAC World Congress*, Yokohama, Japan, July 9 – 14, 2023.
12. M.H. Iversflaten, B.K. Sæbø, E.A. Basso, K.Y. Pettersen and J.T. Gravdahl, "Task-Priority Operational Space Control for Vehicle-Manipulator Systems with Modelling Errors", *Proc. 22nd IFAC World Congress*, Yokohama, Japan, July 9 – 14, 2023.
13. J.I. Dyrhaug, E. Tvetter, H.M. Schmidt-Didlauskies, E.A. Basso, K.Y. Pettersen and J.T. Gravdahl, "Robust Hierarchical Tracking Control of Vehicle-Manipulator Systems", *Proc. 22nd IFAC World Congress*, Yokohama, Japan, July 9 – 14, 2023.
14. J. Matouš, K.Y. Pettersen, D. Varagnolo and C. Paliotta, "Singularity-free Formation Path Following of Underactuated AUVs", *Proc. 22nd IFAC World Congress*, Yokohama, Japan, July 9 – 14, 2023.
15. A. Orucevic, M.E.B. Lysø, H.M. Schmidt-Didlauskies, K.Y. Pettersen and J. T. Gravdahl, "Optimal Positioning of Snake Robots in Vortex Wakes using Extremeum-Seeking Control", *Proc. 22nd IFAC World Congress*, Yokohama, Japan, July 9 – 14, 2023.
16. E.A. Basso, H.M. Schmidt-Didlauskies A. J. Sørensen and K.Y. Pettersen, "Synergistic PID and Output Feedback Control on Matrix Lie Groups", *Proc. 12th IFAC Symposium on Nonlinear Control Systems*, Canberra, Australia, Jan. 4-6, 2023. **IFAC NOLCOS 2022+ Young Author Award.**
17. H.M. Schmidt-Didlauskies, E.A. Basso, A.J. Sørensen and K.Y. Pettersen, "A Generalization of Synergistic Hybrid Feedback Control with Application to Maneuvering Control of Ships", *Proc. 61st IEEE Conference on Decision and Control, Cancún*, Mexico, Dec. 6-9, 2022.
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19. M.L. Scarpa, B. Nortmann, K.Y. Pettersen and T. Mylvaganam, "Data-driven control of planar snake robot locomotion", *Proc. 61st IEEE Conference on Decision and Control, Cancún*, Mexico, Dec. 6-9, 2022.
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23. A. Orucevic, J.T. Gravdahl, K.Y. Pettersen and A. Chaillet, "Uniform Practical Asymptotic Stability for Position Control of Underwater Snake Robots", *Proc. 2022 IEEE Conf. Control Technology and Applications*, Trieste, Italy, Aug. 22 – 25, 2022.
24. I. Gravdahl, Ø. Stavdahl, A. Koushan, J. Løwer and K.Y. Pettersen, "Modeling for HOAL: Hybrid Obstacle-Aided Locomotion of Snake Robots", *Proc. 10th Vienna International Conference on Mathematical Modelling (MATHMOD)*, Vienna, Austria, July 27-29, 2022.
25. J. Matouš, K.Y. Pettersen and C. Paliotta, "Formation Path Following Control of Underactuated AUVs", *Proc. 2022 European Control Conference*, London, UK, July 12 – 15, 2022.
26. E. Restrepo, J. Matouš and K.Y. Pettersen, "Tracking-in-Formation of Multiple Autonomous Marine Vehicles under Proximity and Collision-Avoidance Constraints", *Proc. 2022 European Control Conference*, London, UK, July 12 – 15, 2022.
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28. K. Seel, M. Haring, E.I. Grøtli, K.Y. Pettersen and J.T. Gravdahl, "Learning-based Robust Model Predictive Control for Sector-bounded Lur'e Systems", *Proc. 2021 Modeling, Estimation and Control Conference*, Online/Austin, TX, Oct. 24-27, 2021.
29. A. Haraldsen, M.S. Wiig and K.Y. Pettersen, "Reactive Collision Avoidance for Nonholonomic Vehicles in Dynamic Environments with Obstacles of Arbitrary Shape", *Proc. 3rd IFAC Conference on Modelling, Identification and Control of Nonlinear Systems*, Online/Tokyo, Japan, Sep. 15-17, 2021.
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45. M. Wrzos-Kaminska, K.Y. Pettersen and J.T. Gravdahl, "Path following control for articulated intervention-AUVs using geometric control of reduced attitude", *Proc. 11th IFAC Symposium on Nonlinear Control Systems*, Vienna, Austria, September 4-6, 2019.
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47. W. Caharija, A.J. Sørensen, K.Y. Pettersen, Marilena Greco and J. T. Gravdahl, "Path Following Control of Underactuated Surface Vessels in the Presence of Multiple Disturbances", *Proc. 2019 European Control Conference*, Naples, Italy, June 25-28, 2019.
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49. H.M. Schmidt-Didlaukies, A.J. Sørensen and K.Y. Pettersen, "Modeling of Articulated Underwater Robots for Simulation and Control", in *Proc. 2018 IEEE OES Autonomous Underwater Vehicle Symposium (AUV)*, Porto, Portugal, Nov. 6-9, 2018.
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