Curriculum Vitae

Personal Information

Name: Ingrid Bouwer Utne

Current position and contact information

Professor, PhD
Department of Marine Technology, Norwegian University of Science and Technology (NTNU)
Otto Nielsens Veg 10, NO-7491 Trondheim, Norway
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Web: http://www.ntnu.edu/employees/ingrid.b.utne

Experience and expertise

Risk assessment, operational risk, system safety, supervisory risk control, and maintenance management

- Focused on marine, maritime, and autonomous systems

Teaching courses

TMR4130 Risk analysis and safety management of marine systems (MSc)
TMR4335 Marine Technology - Propulsion systems, safety, and environment (BSc)
TMR06/17 Autonomous marine systems/Advanced methods in risk analysis (MSc)
MR8404 System safety – analysis and modeling (PhD)

Short biography

Ingrid Bouwer Utne earned a PhD degree in Safety, Reliability, and Maintenance at NTNU in 2007. In 1995-1997 Utne attended the Officer Candidate School in the Norwegian Navy and worked as Operations Officer (operasjonsbefal) onboard two frigates (KNM Narvik/Stavanger). Among other things, she signed contract with NATO's Immediate Reaction Force (IRF) and was deployed three months with Standing Naval Force Atlantic (STANAVFORLANT). From 2004-2009, she was a Research Fellow/PhD-student at SINTEF Fisheries and Aquaculture (now SINTEF Ocean), a Research Scientist at SINTEF Safety Research, and a Post-Doctoral Fellow in the RAMS group at NTNU. In 2009, she entered a Qualification Fellowship of marine operation and maintenance at NTNU (full Professorship from July 2011). In addition, she worked part time as a Researcher on production efficiency/integrated operations in Statoil ASA (now Equinor). In 2010, Utne was a visiting scholar (6 months) in the Ocean Engineering Group at University of California, Berkeley, where she became a member of the Deepwater Horizon Study Group (DHSG) at the Center for Catastrophic Risk Management. The DHSG served as advisor to the US Presidential Commission, the Bureau of Ocean Energy Management, Regulation and Enforcement, and the public on issues related to the Macondo blowout in the Gulf of Mexico. From 2012-2013 she was the Head of the Marine Systems Research Group at NTNU, and from 2014 to July 2017 she was Deputy Head at the Department of Marine Technology, Research. Currently, she is an employee representative of the NTNU Board (2021->). Utne has published more than 180 scientific articles on risk assessment, supervisory risk control, safety indicators, system safety, maintenance, and sustainability analyses related to autonomy, ships and marine systems, offshore oil and gas installations, fisheries, and aquaculture. She has been an affiliated Researcher in Centre of Excellence (CoE) Autonomous Marine Operation and Systems (NTNU AMOS), and currently, her main research work focuses on supervisory risk control of autonomous systems.

H-index: 45 (Google Scholar, Oct 2024)

Education

2007	Ph.D. in Safety, Reliability and Maintenance, Department of Production and Quality Engineering, NTNU
2004	MSc in Product Design Engineering, Department of Product Design, NTNU
1997-1999	Basic courses in psychology and philosophy, Department of Psychology/Department of Philosophy, NTNU
1995-1997	Officer Candidate School (BSMA), Horten, Norway

Scientific journal publications

1. Cheng, T, Veitch, EA, Utne, IB, Ramos, MA, Mosleh, A, Alsos, OA, Wu, B. 2024. Analysis of human errors in human-autonomy collaboration in autonomous ships operations through shore control experimental data. Reliability Engineering and System Safety, 246, 110080.
2. Dugan, SA, Utne, IB. 2024. Statistical analysis of vessel loss of command frequency. Maritime Transport Research, 6, 100104.
3. Gomola, A, Utne, IB. 2024. A novel STPA approach to software safety and security in autonomous maritime systems. Heliyon, 10(10), e31483.
4. Veitch, EA, Alsos, OA, Cheng, T, Senderud, K, Utne, IB. 2024. Human factor influences on supervisory control of remotely operated and autonomous vessels. Ocean Engineering, 299, 117257.
5. Bremnes, JE, Utne, IB, Krogstad, TR, Sørensen, AJ. 2024. Holistic Risk Modeling and Path Planning for Marine Robotics. IEEE Journal of Oceanic Engineering.
6. Maidana, RG, Parhizkar, T, Martin GS, Utne IB. Dynamic probabilistic risk assessment with K-shortest paths planning for generating discrete dynamic event trees. Reliability Engineering and System Safety, 242, 109725.
7. Johansen, T, Utne, IB. 2024. Human – autonomy collaboration in supervisory risk control of autonomous ships. Journal of Marine Engineering and Technology, 23(2), 135-153.
8. Kristensen, SD, Dallolio, A, Utne IB. 2024. A systems approach to hazard identification for solar-powered and wave-propelled unmanned surface vehicle. Journal of Marine Engineering and Technology, 23(2), 122-134.
9. Maidana, RG, Kristensen, SD, Utne, IB, Sørensen, AJ. 2023. Risk-based path planning for preventing collisions and groundings of maritime autonomous surface ships. Ocean Engineering, 290, 116417.
10. Rothmund, SV, Thieme, C, Utne, IB, Johansen, TA. 2023. A Bayesian approach to risk-based autonomy, with applications to contact-based drone inspections. Journal of Intelligent and Robotic Systems: Theory and Applications, 109 (2), 31.
11. Blindheim, S, Johansen, TA, Utne, IB. 2023. Risk-based supervisory control for autonomous ship navigation. Journal of Marine Science and Technology (Japan), 28(3), 624-648.
12. Cheng, T, Utne, IB, Wu, B, Wu, Q. 2023. A novel system-theoretic approach for human-system collaboration safety: Case studies on two degrees of autonomy for autonomous ships. Reliability Engineering and System Safety, 237, 109388.
13. Yang, R, Bremnes, JE, Utne, IB. 2023. Online risk modeling of autonomous marine systems: Case study of autonomous operations under sea ice. Ocean Engineering, 281, 114765.
14. Yang, R, Vatn, J, Utne, IB. 2023. Dynamic maintenance planning for autonomous marine systems (AMS) and operations. Ocean Engineering, 278, 114492.
15. Johansen, T, Blindheim, S, Torben, TR, Utne, IB, Johansen, TA, Sørensen, AJ. 2023. Development and testing of a risk-based control system for autonomous ships. Reliability Engineering and System Safety, 234, 109195.
16. Thieme, CA, Ramos, MA, Utne, IB, Mosleh, A. 2023. Editorial for the special issue on the International Workshop on Autonomous System Safety (IWASS). Proceedings of the Institution of Mechanical Engineers, Part O: Journal of Risk and Reliability, 237(2), 275-277.
17. Torben, TR, Glomsrud, JA, Pedersen, TA, Utne IB, Sørensen, AJ. 2023. Automatic simulation-based testing of autonomous ships using Gaussian processes and temporal logic. Proceedings of the Institution of Mechanical Engineers, Part O: Journal of Risk and Reliability, 237(2), 293-313.
18. Guo, C, Haugen, S, Utne, IB. 2023. Risk assessment of collisions of an autonomous passenger ferry. Proceedings of the Institution of Mechanical Engineers, Part O: Journal of Risk and Reliability, 237(2), 425-435.
19. Thieme, CA, Rokseth, B, Utne, IB. 2023. Risk-informed control systems for improved operational performance and decision-making. Proceedings of the Institution of Mechanical Engineers, Part O: Journal of Risk and Reliability, 237(2), 332-354.

20. Torben, TR, Smogeli, Ø, Glomsrud, JA, Utne, IB, Sørensen, AJ. 2023. Towards contract-based verification for autonomous vessels. Ocean Engineering, 270, 113685.
21. Maidana, RG, Parhizkar, T, Gomola, A, Utne, IB, Mosleh, A. 2023. Supervised dynamic probabilistic risk assessment: Review and comparison of methods. Reliability Engineering and System Safety, 230, 108889.
22. Guo, C, Utne, IB. 2022. Development of risk indicators for losing navigational control of autonomous ships. Ocean Engineering, 266, 113204.
23. Yang, R, Utne, IB. 2022. Towards an online risk model for autonomous marine systems (AMS). Ocean Engineering, 251, 111100.
24. Johansen, T, Utne, IB. 2022. Supervisory risk control of autonomous surface ships. Ocean Engineering, 251, 111045.
25. Yang, X, Holmen, IM, Utne, IB. 2022. Scenario analysis of fish escape in Norwegian aquaculture for implementation of barrier management and improved learning from accidents. Marine Policy, 143, 105208.
26. Thieme, CA, Rokseth, B, Utne, IB. 2021. Risk-informed control systems for improved operational performance and decision-making. Proceedings of the Institution of Mechanical Engineers, Part O: Journal of Risk and Reliability.
27. Eriksen, S, Utne, IB, Lützen, M. 2021. An RCM approach for assessing reliability challenges and maintenance needs of unmanned cargo ships. Reliability Engineering and System Safety, 210, 107550.
28. Parhizkar, T, Vinnem JE, Utne IB, Mosleh, A. 2021. Supervised Dynamic Probabilistic Risk Assessment of Complex Systems, part 1: General overview. Reliability Engineering and System Safety, 208, 107406.
29. Parhizkar, T, Utne IB, Vinnem JE, Mosleh, A. 2021. Supervised Dynamic Probabilistic Risk Assessment of Complex Systems, part 2: Application to risk-informed decision making, practice and results. Reliability Engineering and System Safety, 208, 107392.
30. Parhizkar, T, Utne IB, Vinnem JE, Mosleh, A. 2021. Dynamic Probabilistic Risk Assessment of decision making in emergencies for complex systems, case study: Dynamic positioning drilling unit. Ocean Engineering, 237, 109653.
31. Hassel, M, Utne, IB, Vinnem JE. 2021. An allision risk model for passing vessels and offshore oil and gas installations on the Norwegian Continental Shelf. Proceedings of the Institution of Mechanical Engineers, Part O: Journal of Risk and Reliability, 235 (1), 17-32.
32. Hogenboom, S, Vinnem, JE, Utne, IB, Kongsvik, T. 2021. Risk-based decision-support model for offshore dynamic positioning operations. Safety Science, 140, 105280.
33. Holmen, IM, Utne, IB, Haugen, S. 2021. Identification of safety indicators in aquaculture operations based on fish escape report data. Aquaculture, 544, 737143.
34. Utne, IB, Rokseth, B, Sørensen, AJ, Vinnem, JE. 2020. Towards supervisory risk control of autonomous ships. Reliability Engineering and System Safety, 196, 106757.
35. Bremnes, JE, Thieme, CA, Sørensen, AJ, Utne, IB, Norgren, P. 2020. A Bayesian approach to supervisory risk control of AUVs applied to under-ice operations. Marine Technology Society Journal, 54(4), 16-39.
36. Thieme, CA, Mosleh A, Utne IB, Hegde, J. 2020. Incorporating software failure in risk analysis. Part 1: Software functional failure mode classification Reliability Engineering and System Safety, 197, 106803.
37. Thieme, CA, Mosleh, A, Utne IB, Hegde, J. 2020. Incorporating software failure in risk analysis. Part 2: Risk modeling process and case study. Reliability Engineering and System Safety, 198, 106804.
38. Sandøy, SS, Hegde, J, Schjølberg, I, Utne IB. 2020. Polar map: A digital representation of closed structures for underwater robotic inspection. Aquacultural Engineering, 89, 102039.
39. Yang, X, Utne, IB, Sandøy, SS, Ramos, MA, Rokseth, B. 2020. A systems-theoretic approach to hazard identification of marine systems with dynamic autonomy. Ocean Engineering, 217, 107930.
40. Yang, X, Ramezani, R, Utne IB, Mosleh A, Lader, PF. 2020. Operational limits for aquaculture operations from a risk and safety perspective. Reliability Engineering and System Safety, 204, 107208.
41. Ramos, MA, Thieme CA, Utne IB, Mosleh, A. 2020. A generic approach to analyzing failures in human-system interaction in autonomy. Safety Science, 129, 104808.
42. Parhizkar, T, Hogenboom, S, Vinnem JE, Utne, IB. 2020. Data driven approach to risk management and decision support for dynamic positioning systems. Reliability Engineering and System Safety, 201, 106964.
43. Bucelli, M, Utne, IB, Salvo Rossi, P, Paltrinieri, N. 2020. A system engineering approach to subsea spill risk management. Safety Science, 123, 104560.
44. Ramos, MA, Thieme, CA, Utne, IB, Mosleh, A. 2020. Human-system concurrent task analysis for maritime autonomous surface ship operation and safety. Reliability Engineering and System Safety, 195, 106697.

45. Hogenboom, S, Rokseth, B, Vinnem, JE, Utne, IB. 2020. Human reliability and the impact of control function allocation in the design of dynamic positioning systems. Reliability Engineering and System Safety, 194, 106340.
46. Ramos, M.A., Utne, I.B., Mosleh, A. 2020. Comments to Wrobel and Montewka on collision avoidance of autonomous ships and human failure events. Safety Science, 121, 632-633.
47. Yang, X, Utne, IB, Holmen, IM. 2020. Methodology for hazard identification in aquaculture operations (MHIAO). Safety Science 121, 430-450
48. Utne, IB, Schjølberg, I, Roe, E. 2019. High reliability management and control operator risks in autonomous marine systems and operations. Ocean Engineering, 171, 399-416.
49. Hegde, J, Henriksen, EH, Utne, IB, Schølberg, I. 2019. Development of safety envelopes and subsea traffic rules for autonomous remotely operated vehicles. Journal of Loss Prevention in the Process Industries, 145-158.
50. Holen, SM, Yang, X, Utne, IB, Haugen, S. 2019. Major accidents in Norwegian fish farming. Safety Science, 120, 32-43.
51. Ramos, MA, Utne, IB, Mosleh, A. 2019. Collision avoidance on maritime autonomous surface ships: Operators' tasks and human failure events. Safety Science, 116, 33-44.
52. Rokseth, B, Utne, IB. 2019. Deriving safety requirement hierarchies for families of maritime systems. Transactions of the Royal Institution of Naval Architects Part A: International Journal of Maritime Engineering, 161, A229-A243.
53. Holmen, IM, Utne, IB, Haugen, S. 2018. Risk assessments in the Norwegian aquaculture industry: Status and improved practice. Aquaculture Engineering, 83, 65-75.
54. Thieme, CA, Utne, IB, Haugen, S. 2018. Assessing ship risk model applicability to Marine Autonomous Surface Ships. Ocean Engineering, 165, 140-154.
55. Holen, SM, Utne, IB. 2018. A framework based on a systems approach to developing safety indicators in fish farming. Safety, 4 (2), 19.
56. Holen, S., Utne, IB, Holmen, IM, Aasjord, H. 2018. Occupational safety in aquaculture – Part 2: Fatalities in Norway 1982-2015. Marine Policy, 96, 193-199.
57. Holen, S., Utne, IB, Holmen, IM, Aasjord, H. 2018. Occupational safety in aquaculture – Part 1: Injuries in Norway. Marine Policy, 96, 184-192.
58. Hegde, J, Utne, IB, Schjølberg, I, Thorkildsen, B. 2018. A Bayesian approach to risk modeling of autonomous subsea intervention operations. Reliability Engineering and System Safety, 175, 142-159.
59. Rokseth, B, Utne, IB, Vinnem, JE. 2018. Deriving verification objectives and scenarios for maritime systems using the systems-theoretic process analysis. Reliability Engineering and System Safety 169, 18-31.
60. Thieme, CA, Utne, IB. 2017. A risk model for autonomous marine systems and operation focusing on human-autonomy collaboration. Proceedings of the Institution of Mechanical Engineers, Part O. Journal of Risk and Reliability, 231 (4), 446-464.
61. Hassel, M, Utne, IB, Vinnem, JE. 2017. Allision risk analysis of offshore petroleum installations on the Norwegian Continental Shelf – an empirical study of vessel traffic patterns. WMU Journal of Maritime Affairs, 16(2), 175-195.
62. Thieme, CA, Utne, IB. 2017. Safety performance monitoring of autonomous marine systems. Reliability Engineering and System Safety, 159; 264-275.
63. Rokseth, B, Utne, IB, Vinnem, JE. 2017. A systems approach to risk analysis of maritime operations. Proceedings of the Institution of Mechanical Engineers, Part O. Journal of Risk and Reliability, 231 (1), 53-68.
64. Jafarzadeh, S, Paltrinieri, N, Utne, IB, Ellingsen, H. 2017. LNG-fueled fishing vessels: A systems engineering approach. Transportation Research Part D: Transport and Environment 50, 202-222.
65. Hegde, J, Utne, IB, Schjølberg, I. 2016. Development of collision risk indicators for autonomous subsea inspection, maintenance and repair. Journal of Loss Prevention in the Process Industries 44, 440-452.
66. Kim, H, Haugen, S, Utne, IB. 2016. Reliability analysis of the IMO regulation – safe return to port. Ships and Offshore Structures, 11(5), 461-470.
67. Kim, H, Haugen, S, Utne, IB. 2016. Assessment of accident theories for major accidents focusing on the MV SEWOL disaster: Similarities, differences, and discussion for a combined approach. Safety Science 82, 410-420.
68. McGuinness, E, Utne, IB. 2016. Identification and analysis of deficiencies in accident reporting mechanisms for fisheries. Safety Science, 82, 245-253.
69. Vinnem, JE, Utne, IB, Schjølberg, I. 2015. On the need for online decision support in FPSO-shuttle tanker collision risk reduction. Ocean Engineering, 101, 109-117.

70. Dai, L, Stålhane, M, Utne, IB. 2015. Routing and Scheduling of Maintenance Fleet for Offshore Wind Farms. Wind Engineering, 39 (1), 15-30.
71. Akhtar, MJ, Utne, IB. 2015. Common patterns in aggregated accident analysis charts from human fatigue-related groundings and collisions at sea. Maritime Policy & Management, 42 (2), 186-206.
72. Ramirez, P, Utne, IB. 2014. Use of dynamic Bayesian networks for life extension assessment of ageing systems. Reliability Engineering and System Safety, 113, 119-136.
73. Akhtar, MJ, Utne, IB. 2014. Reducing the probability of ship grounding: Which measure to undertake? WMU Journal of Maritime Affairs, 13 (1), 27-42.
74. Akhtar, MJ, Utne, IB. 2014. Human fatigue's effect on the risk of maritime groundings - A Bayesian Network modeling approach. Safety Science, 62, 427 – 440.
75. McGuinness, E, Utne, IB. 2014. A systems engineering approach to implementation of safety management systems in the Norwegian fishing fleet Reliability Engineering and System Safety, 121, 221 – 239.
76. Jafarzadeh, S, Utne, IB. 2014. A framework to bridge the energy efficiency gap in shipping. Energy, 69, 603-612.
77. Ramirez, P, Utne, IB. 2013. Decision support for life extension of technical systems through virtual age modeling. Reliability Engineering and System Safety, 115, 55-69.
78. Ramirez, P, Utne, IB, Haskins, C. 2013. Application of systems engineering to integrate aging management into maintenance management of oil and gas facilities. Systems Engineering, 16(3), 329-345.
79. McGuinness, E, Aasjord, HL, Utne, IB, Holmen, IM. 2013. Injuries in the commercial fishing fleet of Norway 2000-2011. Safety Science 57, 82-99.
80. McGuinness, E, Aasjord, HL, Utne, IB, Holmen, IM. 2013. Fatalities in the Norwegian fishing fleet 1990-2011. Safety Science 57, 335-351.
81. Dai, L, Ehlers, S, Rausand, M, Utne, IB. 2013. Risk of collision between service vessels and offshore wind turbines. Reliability Engineering and System Safety, 109, 18-31.
82. Kjølle, G, Utne, IB, Gjerde, O. 2012. Risk analysis of critical infrastructures emphasizing electricity supply and interdependencies. Reliability Engineering and System Safety, 105, 80-89.
83. Utne, IB, Brurok, T, Rødseth, H. 2012. A structured approach to condition monitoring. Journal of Loss Prevention in the Process Industries.25 (3), 478-488.
84. Utne, IB, Thuestad, L, Finbak, K, Thorstensen, TA. 2012. Shutdown preparedness in oil and gas production. Journal of Quality in Maintenance Engineering, 18 (2), 154-170.
85. Utne, IB, Brurok, T, Larsen, S. 2011. Monitoring the mechanical integrity of heat exchangers. Process Safety Progress 30 (4), 328-333.
86. Skogdalen, JE, Utne, IB, Vinnem, JE. 2011. Developing safety indicators for preventing offshore oil and gas deepwater drilling blowouts. Safety Science 49 (8-9), 1187-1199.
87. Utne, IB, Hokstad, P, Vatn, J. 2011. A method for risk modeling of interdependencies in critical infrastructures. Reliability Engineering and System Safety, 96 (6), 671-678.
88. Øien, K, Utne, IB, Herrera, IH. 2011. Building safety indicators. Part 1 - A theoretical background. Safety Science, 9 (2), 162-171.
89. Øien, K, Utne, IB, Tinmannsvik, RK, Massaiu, S. 2011. Building safety indicators. Part 2 – Application, practices and results. Safety Science, 49 (2), 148-161.
90. Ramirez, P, Utne, IB. 2011. Challenges with ageing plants. Process Safety Progress, 30 (2), pp. 196-199.
91. Standal, D, Utne, IB. 2011. The hard choices of sustainability. Marine Policy, 35 (4), 519-527.
92. Utne, IB. 2010. Maintenance strategies for deep sea offshore wind turbines. Journal of Quality in Maintenance Engineering, 16 (4), 367-381.
93. Lundteigen, MA, Rausand, M, Utne, IB. 2009. Integrating RAMS engineering and management with the safety life cycle of IEC 61508. Reliability Engineering and System Safety, 94, pp. 1894-1903.
94. Rausand, M, Utne, IB. 2009. Product safety. Principles and practices in a life cycle perspective. Safety Science, 47, 939-947.
95. Utne, IB. 2009. Life cycle cost (LCC) as a tool for improving sustainability in the Norwegian fishing fleet. Journal of Cleaner Production, 17, 335-344.
96. Ellingsen, H, Olaussen, JO, Utne IB. 2009. Environmental analysis of the Norwegian fishery and aquaculture industry – A preliminary study focusing on farmed salmon. Marine Policy, 33, 479-488.
97. Utne, IB. 2009. Improving the environmental performance of the fishing fleet by use of Quality Function Deployment (QFD). Journal of Cleaner Production, 17 (8), 724-731.
98. Utne, IB. 2008. Acceptable sustainability in the fishing fleet. Marine Policy, 32, 475-482.
99. Utne, IB. 2008. Are the smallest vessels the most sustainable? Trade-off analysis of sustainability attributes. Marine Policy, 32, 465-474.

100. Standal, D, Utne, IB. 2007. Can cod farming affect cod fishing? A system evaluation of sustainability. Marine Policy, 31, 527-534.
101. Utne, IB. 2007. System evaluation of sustainability in the Norwegian cod-fisheries, Marine Policy, 31, 390-401.
102. Utne, IB. 2006. Systems engineering principles in fisheries management, Marine Policy, 30, 624-634.

Books

- Parhizkar, T, Utne, IB, Vinnem, JE. 2022. Online risk assessment of complex automated maritime systems. Principles, modeling, and applications. Springer Series in Reliability Engineering.
- Rausand, M, Utne, IB. 2022. Risk analysis. Theory and Methods, 2nd edition (in Norwegian). Fagbokforlaget, Trondheim, Norway.
- Hokstad, P, Utne, IB, Vatn, J. 2014. (eds) Risk and interdependencies in critical infrastructures. A guide for analysis. National Defense Industry Press/Springer, China. Chinese translation.
- Hokstad, P, Utne, IB, Vatn, J. 2012. (eds) Risk and interdependencies in critical infrastructures. A guide for analysis. Springer Series in Reliability Engineering.

All publications

http://www.cristin.no/as/WebObjects/cristin.woa/4/wa/fres?erNordisk=1&erNasjonalt=1&fornavn=Ingrid&erUkjent=1&action=sok&erInternasjonalt=1&bs=50&erNorsk=1&etternavn=Utne&la=en&visParametre=1

Graduated PhD students (main supervisor)

1. Thomas Johansen. 2024. Risk-based control of autonomous surface ships.
2. Chuanqi Guo. 2023. Analysis and modeling of risk of an autonomous ferry for safer design and operation.
3. Ruochen Yang. 2023. Methods and models for analyzing and controlling the safety in operations of autonomous marine systems.
4. Ingunn Marie Holmen. 2022. Safety in exposed aquaculture operations. Strategies and methods for reducing risk.
5. Siri Holen. 2019. Safety in Norwegian Fish Farming. Concepts and methods for improvement.
6. Christoph Thieme. 2018. Risk analysis and modelling of autonomous marine systems.
7. Børge Rokseth. 2018. Safety and verification of advanced maritime vessels: an approach based on systems theory.
8. Jeevith Hegde. 2018. Tools and methods to manage risk in autonomous subsea inspection, maintenance and repair operations.
9. Martin Hassel. 2017. Risk analysis and modeling of allisions between passing vessels and offshore installations.
10. Edgar McGuinness. 2016. Safety in the Norwegian fishing fleet - analysis and measures for improvement.
11. Lijuan Dai. 2014. Safe and efficient operation and maintenance of offshore wind farms.
12. Juned Akhtar. 2014. The effect of human fatigue on risk at sea.
13. Pedro Ramirez. 2013. Aging management and life extension of oil and gas facilities.

Current PhD students (main supervisor)

- Thale E. Fink. Risk modeling and metrics for autonomy.
- Kwi Yeon Koo: Hazard analysis and system safety monitoring through resilient performance and risk indicators
- Klaus Ening. Uncertainty-aware manipulation and control of unmanned, underwater vehicles (UUVs).
- Børge Kjeldstad. Risk based design criteria for remote control centers and autonomous vessels.
- Anna S. Hüllein. Safety and sustainability of zero emission coastal vessels.
- Spencer A. Dugan. Reliable and robust design operation of propulsion systems for autonomous ships.
- Susanna D. Kristensen. Online risk modeling of autonomous ships.
- Renan Guedes. Risk Assessment for Decision-support in Automated Planning and Resource Management in Autonomous Marine Vehicles.

Current Post Docs

- Paul Lee

Past Post Docs (main supervisor)

- Alojz Gomola. Software risk analysis and modeling in complex systems. 2021-2023.
- Alun Jones. Operational and environmental risks in the Arctic. 2020-2022.
- Børge Rokseth. Risk assessment and control of autonomous ships. 2018-2020.
- Christoph Thieme. Risk modeling of autonomous systems. 2018-2021.
- Jeevith Hedge. Safety in marine autonomous underwater vehicles. 2018-2020.
- Marilia A. Ramos. Risk assessment of autonomous ships, 2017-2019.
- Xue Yang. Risk management and autonomous operations in exposed aquaculture, 2017-2019.

Current (selected) research projects

- **ERC AdG BREACH:** Breaching the boundaries of safety and intelligence in autonomous systems with risk-based rationality, 2025-2029 (**Principal Investigator**).
- **SAFEGUARD:** Intelligent autonomous systems for safeguarding operations and infrastructure at sea. KSP – project funded by Petromaks 2, Equinor and Vår Energi. Research partner: Norwegian Defense Research Establishment (FFI), 2024-2027.
- **SFI Autoship:** NTNU – Centre of Research based innovation on Autonomous Ships (SFI Autoship) – **Work package leader/principal scientist** of Safety and assurance – Research Council of Norway and industry, 2020-2028.
- **ORCAS:** Online risk management and risk control for autonomous ships, 2018-2024 (**project manager/principal scientist**). KPN project funded by MAROFF, DNVGL and Kongsberg Maritime.

Organization of international meetings, conferences and participation in professional networks

- Co-organizer/host of IWASS workshops with UCLA and University of Stuttgart (https://www.ntnu.edu/imt/iwass):
    - 1st International Workshop on Autonomous Systems Safety, Trondheim, Norway, March 2019.
    - 2nd International Workshop on Autonomous Systems Safety, Los Angeles, March 2020 (Postponed to April 2021 – held digitally)
    - 3rd International Workshop on Autonomous Systems Safety, Dublin, August 2022
    - 4th International Workshop on Autonomous Systems Safety, Southampton, September 2023
    - 5th International Workshop on Autonomous Systems Safety, Krakow, June 2024.
    - 6th International Workshop on Autonomous Systems Safety, Florida, January 2025.
- Co-chair, Technical Committee on Maritime and Offshore Technology, European Safety and Reliability Association (ESRA), 2016->
- Deepwater Horizon Study Group, Center for Catastrophic Risk Management, University of California, Berkeley, USA, 2010-2011.
- Member of technical programme committees of the ESREL Conferences 2022 (Ireland), 2021 (France), 2020 (Venice), 2018 (Trondheim), 2017 (Slovenia) and 2015 (Switzerland), a conference with 500 - 1000 international participants.
- Session chair: PSAM 2018, 2014, OMAE 2017, 2014, ESREL conferences from 2015->.
- Member of Scientific committee for SRA-E Conference 2013 (www.srae2013.no)
- Member of Programme committee for IO Conference 2011 and 2012 (http://www.ioconf.no)

Selected invited lectures and presentations Research, and public dissemination

- Keynote speaker, European Safety and Reliability Conference (ESREL): Risk-aware autonomous systems for safe and intelligent decision making, Southampton, September 2023.
- Invited speaker, STAB&S, UK (1st International Conference on the Stability and Safety of Ships and Ocean Vehicles): Advances in the safety and assurance of autonomous ships, June 2021 (digital).
- Invited speaker, DNV TopTech - UC Berkeley/Haas School of Business Executive Management Programme, USA: Maintenance, safety and reliability of marine systems, January 2012.

In the aftermath of the Viking Sky cruise ship incident in 2019, I was an invited speaker at the Norshipping Conference, on maritime risk management - challenges and potential solutions for improvement.

In recent years, I have published several articles in Norway´s leading industry newspaper, Dagens Næringsliv, about the aftermath of the Macondo blowout, the Viking Sky incident and emergency preparedness, and the

need for risk reduction in the cruise ship traffic in Norway, and Covid-19.

Awards, academy memberships

- Member of the Norwegian Academy of Technological Sciences
- ICES 2006 Symposium, Boston, U.S.A.: Best PhD-student presentation
- Norwegian Research Council/NTNU School of Entrepreneurship (2004): Award winner - Best master thesis for industrialization, NTNU
- Award winner in Venture Cup 2004 for product developed in master thesis

Other professional activities

- Member of the NTNU Board (employee representative), 2021->.
- Member of the Committee appointed by Royal Decree of June 19th 2020: NOU Cruise ship safety along the Norwegian Coast, Ministry of Justice and Public Security, Norway, 2020 – 2022.
- External examiner (2015-2023) for PhD defenses at Delft University of Technology, KTH, Luleå University of Technology, Memorial University of Newfoundland, University of Strathclyde, USN, Aalto University School of Engineering.
- Co-chair of the Technical Committee on Maritime and Offshore Technology, European Safety and Reliability Association (ESRA), 2016->
- Member of the Risk and Vulnerability (ROSS) Gemini Center, SINTEF/NTNU, Norway, 2021->.
- Expert evaluator for the European Commission and the Horizon 2020 programme.
- Co-editor of special issue on Autonomous systems safety in Journal of Risk and Reliability (2023) and reviewer of several scientific journals since 2007.
- Member of the NFAS Board (Norwegian forum for autonomous ships), 2919-2021.
- Member of the NTNU Research Ethical Committee, 2014–2018
- Member of the NTNU Faculty of Engineering Science and Technology Board, 2013-2017
- Member of the NTNU Faculty of Engineering Science and Technology Board, Employment committe, 2013-2017