

Publications of Thor I. Fossen



[Google Scholar Publication List and Statistics](#)

Books

- [1] **Fossen, T. I. (2021).** [Handbook of Marine Craft Hydrodynamics and Motion Control](#). 2nd edition, John Wiley & Sons Ltd.
- [2] **Fossen, T. I. (2011).** [Handbook of Marine Craft Hydrodynamics and Motion Control](#). 1st edition, John Wiley & Sons Ltd.
- [3] **Fossen, T. I. (2002).** Marine Control Systems: Guidance, Navigation and Control of Ships, Rigs and Underwater Vehicles, Marine Cybernetics AS, Trondheim.
- [4] **Fossen, T. I. (1994).** [Guidance and Control of Ocean Vehicles](#). John Wiley & Sons Ltd.

Editorials

- [5] **Fossen, T. I., K. Y. Pettersen and Nijmeijer (2017)(eds.)** [Sensing and Control for Autonomous Vehicles: Applications to Land, Water and Air Vehicles](#). Lecture Notes in Control and Information Sciences, Springer-Verlag.
- [6] **Fossen, T. I. and H. Nijmeijer (2012) (eds.)**. [Parametric Resonance in Dynamical Systems](#), Springer-Verlag.
- [7] **Nijmeijer, H. and T. I. Fossen (1999). (eds.)**. [New Directions in Nonlinear Observer Design](#), Springer-Verlag.

2021

- [8] **Coates, E. M. L. and T. I. Fossen.** Geometric Reduced-Attitude Control of Fixed-Wing UAVs. Special Issue on "Advances in Aerial, Space, and Underwater Robotics, *Applied Sciences*, Vol. 11, No. 7., pp. 1-35, 2021. <https://doi.org/10.3390/app11073147>
- [9] **Dalolio, A., J. A. Alfredsen, T. I. Fossen and T. A. Johansen.** Experimental Validation of a Nonlinear Wave Encounter Frequency Estimator Onboard a Wave-Propelled USV. Proc. of the IFAC Conference on Control Applications in Marine Systems, Robotics, and Vehicles, Oldenburg, Germany, 22-24 September 2021.
- [10] **Skulstad, R., G. Li, T. I. Fossen, B. Vik and H. Zhang.** A Hybrid Approach to Motion Prediction for Ship Docking - Integration of a Neural Network Model into the Ship Dynamic Model. *IEEE Transactions on Instrumentation & Measurement*, Vol. 70, 2021. <https://doi.org/10.1109/TIM.2020.3018568>
- [11] **Skulstad, R., G. Li, T. I. Fossen, T. Wang and H. Zhang.** A Co-operative Hybrid Model For Ship Motion Prediction. *Modeling, Identification and Control*. MIC-42(1), 2021. <https://doi.org/10.4173/mic.2021.1.2>
- [12] **Vagale, A., R. Oucheikh, R. T. Bye, O. L. Osen and T. I. Fossen.** Path Planning and Collision Avoidance for Autonomous Surface Vehicles I: A Review. *Journal of Marine Science and Technology*, 2021. <https://doi.org/10.1007/s00773-020-00787-6>
- [13] **Vagale, A., R. Oucheikh, R. T. Bye, O. L. Osen and T. I. Fossen.** Path Planning and Collision Avoidance for Autonomous Surface Vehicles II: A Review. *Journal of Marine Science and Technology*, 2021. <https://doi.org/10.1007/s00773-020-00790-x>

- [14] **Volden, Ø., A. Stahl and T. I. Fossen.** Vision-Based Positioning System for Auto-Docking of Unmanned Surface Vehicles (USVs). *International Journal of Intelligent Robotics and Applications*, 2021.

2020

- [15] **Coates, E. M. L., D. P. Reinhardt and T. I. Fossen.** Reduced-Attitude Control of Fixed-Wing Unmanned Aerial Vehicles Using Geometric Methods on the Two-Sphere. Proc. of the IFAC World Congress, Berlin, Germany, 12-17 July 2020 <https://doi.org/10.1016/j.ifacol.2020.12.1606>
- [16] **Halvorsen, H. S., H. Øveraas, O. Landstad, V. Smines, T. I. Fossen and T. A. Johansen.** Wave Motion Compensation in Dynamic Positioning of Small Autonomous Vessels. *Journal of Marine Science and Technology*, 2020. <https://doi.org/10.1007/s00773-020-00765-y>
- [17] **Johansen T. A. and T. I. Fossen.** Guidance, Navigation, and Control of Fixed-Wing Unmanned Aerial Vehicles. In: Ang M., Khatib O., Siciliano B. (eds) *Encyclopedia of Robotics*. Springer, Berlin, Heidelberg, 2020. <https://doi.org/10.1007/978-3-642-41610-1>
- [18] **Klausen, K., C. Meissen, T. I. Fossen, M. Arcak and T. I. Johansen.** Cooperative Control for Multirotors Transporting an Unknown Suspended Load under Environmental Disturbances. *IEEE Transactions on Control Systems Technology*. Vol. 28, No. 2, pp. 653-660. <https://doi.org/10.1109/TCST.2018.2876518>.
- [19] **Leira, F. S., H. H. Helgesen, T. A. Johansen and T. I. Fossen.** Object Detection, Recognition and Tracking from UAVs using a Thermal Camera. *Journal of Field Robotics (JFR)*, 2020. <https://doi.org/10.1002/rob.21985>
- [20] **Rogne, R., T. H. Bryne, T. I. Fossen and T. A. Johansen.** On the Usage of Low-Cost MEMS Sensors, Strapdown Inertial Navigation and Nonlinear Estimation Techniques in Dynamic Positioning. *IEEE Journal of Oceanic Engineering*. <https://doi.org/10.1109/JOE.2020.2967094>
- [21] **Xu, H., T. I. Fossen and C. Guedes Soares.** Uniformly Semiglobally Exponential Stability of Vector Field Guidance Law and Autopilot for Path Following, *European Journal of Control*, Vol. 53, May 2020, pp. 88-97. <https://doi.org/10.1016/j.ejcon.2019.09.007>

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- [22] **Borup, K. T., B. N. Stovner, T. I. Fossen and T. A. Johansen.** Kalman Filters for Air Data System Bias Correction for a Fixed-Wing UAV. *IEEE Transactions on Control Systems Technology*. 2019. <https://doi.org/10.1109/TCST.2019.2931672>
- [23] **Borup, K. T., T. I. Fossen and T. A. Johansen.** A Machine Learning Approach for Estimating Air Data Parameters of Small Fixed-Wing UAVs Using Distributed Pressure Sensors. *IEEE Transactions on Aerospace and Electronic Systems*, 2019. <https://doi.org/10.1109/TAES.2019.2945383>
- [24] **Hansen, J. M., T. A. Johansen, N. Sokolova and T. I. Fossen.** Nonlinear Observer for Tightly Coupled Integrated Inertial Navigation Aided by RTK-GNSS Measurements, *IEEE Transactions on Control Systems Technology*. TCST-27(3):1084-1099, 2019. <https://doi.org/10.1109/TCST.2017.2785840>
- [25] **Mathisen, P. H. and T. I. Fossen.** Robust Navigation System for UAVs in GNSS- and Magnetometer-Denied Environments. Proc. of the ICUAS'19, June 11-14, 2019, Atlanta, GA, USA.
- [26] **Kayacan, E. and T. I. Fossen.** Feedback Linearization Control for Systems with Mismatched Uncertainties via Disturbance Observers. *Asian Journal of Control*. Vol. 21, No. 3, 2019, pp. 1064-1076. <https://doi.org/10.1002/asjc.1802>
- [27] **Jørgensen, E. K., T. I. Fossen, T. H. Bryne and I. Scjøllberg.** Underwater Position and Attitude Estimation Using Acoustic, Inertial and Depth Measurements. *IEEE Journal of Oceanic*

Engineering. Vol. 155, 1 May 2018, Pages 351-360.

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- [28] **Skulstad, R., G. Li, T. I. Fossen, B. Vik and H. Zhang.** Dead Reckoning of Dynamically Positioned Ships using an Efficient Recurrent Neural Network. *IEEE Robotics and Automation Magazine*. Vol. 26 , Issue 3, 2019, pp. 39-51. <https://doi.org/10.1109/MRA.2019.2918125>

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- [29] **Bryne, T. H., H. R. Rogne, T. I. Fossen and T. A. Johansen.** A Virtual Vertical Reference Concept for Aided Inertial Navigation at the Sea Surface. *Control Engineering Practise*. Vol. 70, January 2018, Pages 1–14, <https://doi.org/10.1016/j.conengprac.2017.09.009>
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- [31] **Fossen, S. and T. I. Fossen.** Extended Kalman Filter Design and Motion Prediction of Ships using Live Automatic Identification System (AIS) Data. *Proc. of the 2nd European Conference on Electrical Engineering & Computer Science (EECS 2018)*, Bern, Switzerland, December 20-22.
- [32] **Fossen, T. I., and K. Y. Pettersen.** Modeling of Underwater Vehicles. In: M. A. Ang, O. Khatib and B. Sicilano. (Eds.) *Encyclopedia of Robotocs*: Springer-Verlag Berlin Heidelberg, 2018.
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- [35] **Jørgensen, E. K., T. I. Fossen, I. Schjøberg and P. T. T. Esperanca.** Experimental Validation of Attitude and Rate-Sensor Bias Filter using Range-Difference Measurements. *Control Engineering Practice*. Vol. 73, 2018, pp. 112-123. <https://doi.org/10.1016/j.conengprac.2018.01.002>
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- [37] **Pettersen, K. Y. and T. I. Fossen.** Guidance of Autonomous Underwater Vehicles. In: M. A. Ang, O. Khatib and B. Sicilano. (Eds.) *Encyclopedia of Robotocs*: Springer-Verlag Berlin Heidelberg, 2018.
- [38] **Rogne, R. H., Bryne, T. H., Fossen, T. I., and Johansen.** Redudant MEMS-based inertial navigation using nonlinear observers. *ASME Journal of Dynamic Systems, Measurement and Control*. 140(7), 2108. <https://doi.org/10.1115/1.4038647>
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- [40] **Stovner, B. N. T. A. Johansen, T. I. Fossen and I. Schjøberg.** Attitude Estimation by Multiplicative eXogenous Kalman Filter, *Automatica*. Volume 95, September 2018, Pages 347-355. <https://doi.org/10.1016/j.automatica.2018.05.038>

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- [50] **Helgesen, H. H., F. S. Leira, T. A. Johansen and T. I. Fossen.** Detection and Tracking of Floating Objects using an UAV with Thermal Camera. In "Sensing and Control for Autonomous Vehicles: Applications to Land, Water and Air Vehicles" (T. I. Fossen, K. Y. Pettersen and H. Nijmeijer, Eds.). Springer, 2017, pp. 289-316.
- [51] **Johansen, T. A., T. I. Fossen and J. M. Hansen.** Nonlinear Observer for Tightly Integrated Inertial Navigation Aided by Pseudo-Range Measurements. *Journal of Dynamic Systems, Measurement and Control*, 139(1), January 2017. <http://doi.org/10.1115/1.4034496>
- [52] **Klausen, K., T. I. Fossen and T. A. Johansen.** Nonlinear Control With Swing Damping of a Multicopter UAV with Suspended Load. *Journal of Intelligent & Robotic Systems*, 88(2), 379-394, 2017. <http://doi.org/10.1007/s10846-017-0509-6>
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- [54] **Meissen, C., K. Klausen, M. Arcak, T. I. Fossen and A. K. Packard.** Passivity-based Formation Control for UAVs with a Suspended Load. Proc. of the 20th IFAC World Congress, Toulouse, France, 9-14 July 2017.
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- [58] **Borup, K. T., T. I. Fossen and T. A. Johansen.** A Nonlinear Model-Based Wind Velocity Observer for Unmanned Aerial Vehicles, Proc. of the 10th IFAC Symposium on Nonlinear Control System (NOLCOS'16), 23-25 August, 2016, Monterey, CA.
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- [61] **Fossen, T. and T. Perez.** Model-based Ship Motion Control Design. Chapter 15 in "*Compendium of Ship Hydrodynamics. Practical Tools and Application*" (J-C. Dern, J.-M. Quenez and P. A. Wilson, Eds.), Les Presses de l'ENSTA, Jan. 2016. ISBN-13: 978-2722509498
- [62] **Grip, H. F., T. I. Fossen, T. A. Johansen and A. Saberi.** Nonlinear Observer for Attitude, Position and Velocity: Theory and Experiments. Chapter 17 In "*Multisensor Attitude Estimation*" (H. Fourati and D. C. Belkha, Eds.), CRC Press (Taylor & Francis Group), 2016, pp. 291-314.
- [63] **Hansen, J. M., T. A. Johansen and T. I. Fossen.** Tightly Coupled Integrated Inertial and Real-Time-Kinematic Positioning Approach Using Nonlinear Observer. Proc. of the American Control Conference (ACC'16), Boston, 6-8 July, 2016.
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- [65] **Helgesen, H. H., F. S. Leira, T. A. Johansen and T. I. Fossen.** Tracking of Marine Surface Objects from Unmanned Aerial Vehicles with a Pan/Tilt Unit using a Thermal Camera and Optical Flow. *Proc. of the 2016 International Conference on Unmanned Aircraft Systems (ICUAS'16)*, Arlington, VA, 7-10 June, 2016.
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- [72] **Klausen, K., J. B. Moe, J. C. van den Hoorn, A. Gomola, T. I. Fossen and T. A. Johansen.** Coordinated Control Concept for Recovery of a Fixed-Wing UAV on a Ship using a Net Carried by Multirotor UAVs. *Proc. of the 2016 International Conference on Unmanned Aircraft Systems (ICUAS'16)*, Arlington, VA, 7-10 June, 2016.
- [73] **Mathisen, Siri, K. Gryte, T. A. Johansen and T. I. Fossen.** Nonlinear Model Predictive Control for Longitudinal and Lateral Guidance of a Small Fixed-Wing UAV in Precision Deep Stall Landing. Proc. of the *AIAA SciTech'16* San Diego, California, USA, 4-8 Jan 2016.

- [74] **Moe, S., K. Y. Pettersen, T. I. Fossen and J. T. Gravdahl.** Line-of-Sight Curved Path Following for Underactuated USVs and AUVs in the Horizontal Plane under the influence of Ocean Currents. Proc. of. the IEEE MED'16, Athens, Greece, June 21-24, 2016
- [75] **Perez, T. and T. I. Fossen.** Hydrodynamic Models for Motion Control. Chapter 14 in "*Compendium of Ship Hydrodynamics. Practical Tools and Application*" (J-C. Dern, J.-M. Quenez and P. A. Wilson, Eds.), Les Presses de l'ENSTA, Jan. 2016. ISBN-13: 978-2722509498.
- [76] **Rogne, R. H., T. H. Bryne, T. A. Johansen and T. I. Fossen.** Fault Detection in Lever-arm-compensated Position References System based on Attitude Estimates and Inertial Measurements - Applicable in Dynamic Positioning. Proc. of the American Control Conference (ACC'16), Boston, 6-8 July, 2016.
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