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## Publications

### **Towards Printing Mechatronics: 3D-printed conductive interfacing for digital signals**

Popa, A-A., Duggen, L. & Jouffroy, J., Jul 2020, *Proceedings of the 2020 IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM)*. p. 430-435 9159016

### **3D Printed Hybrid Flexible Electronics with Direct Light Synthesis**

Popa, A-A., Zellers, B., Iversen, S., Kennedy, D., Cortes, P., Duggen, L., Jouffroy, J., Rogers, K., Conner, B. & MacDonald, E., 2020, *Advances in Additive Manufacturing, Modeling Systems and 3D Prototyping - Proceedings of the AHFE 2019 International Conference on Additive Manufacturing, Modeling Systems and 3D Prototyping: Proceedings of the AHFE 2019 International Conference on Human Factors and Systems Interaction*. Di Nicolantonio, M., Rossi, E. & Alexander, T. (eds.). Springer, p. 83-92 (Advances in Intelligent Systems and Computing, Vol. 975).

### **An Accurate Programmable Pulse Generator for Stepper Actuated Real-Time Control Systems**

Ramezani, H., Torbensen, R., Duggen, L. & Jouffroy, J., 24. May 2019, *Proceedings of the 2019 IEEE International Conference on Mechatronics, ICM 2019*. IEEE, p. 358-363

### **On-line parameter estimation of reduced-order models for buildings energy dynamics using the modulating function method**

Ionesi, A. & Jouffroy, J., 31. Jan 2019, *Proceedings of the 2018 Winter Simulation Conference: Simulation for a Noble Cause*. Rabe, M., Juan, A. A., Mustafee, N., Skoogh, A., Jain, S. & Johansson, B. (eds.). IEEE, p. 503-514 (Winter Simulation Conference. Proceedings).

### **On-line parameter and state estimation of an air handling unit model: Experimental results using the modulating function method**

Ionesi, A., Ramezani, H. & Jouffroy, J., 2019, In: *Modeling, Identification and Control*. 40, 3, p. 161-176 16 p.

### **Towards Printing mechatronics: An optimized battery-powered 3D-printed coupling design**

Popa, A. A., Duggen, L. & Jouffroy, J., 2019, *Proceedings of the 2019 IEEE/ASME International Conference on Advanced Intelligent Mechatronics, AIM 2019*. IEEE, p. 418-423 8868575

### **Distributed coordination of energy-storage capacities in virtual microgrids**

Brehm, R., Ramezani, H. & Jouffroy, J., 29. Nov 2018, *2018 European Control Conference (ECC)*. IEEE, p. 1124-1129

### **Step-height detection for the Umbrella Wheel stair-climber using model prediction**

Iversen, S. & Jouffroy, J., 3. Sep 2018, *2018 IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM)*. IEEE, p. 1098-1105

### **On-line parameter estimation of an Air Handling Unit model: experimental results using the modulating function method**

Ionesi, A. & Jouffroy, J., Sep 2018, *IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM)*. IEEE, p. 81-86

### **Towards Printing Mechatronics: Considerations for 3D-printed conductive coupling**

Popa, A-A., Mai, C., Duggen, L. & Jouffroy, J., Sep 2018, *Proceedings of the 2018 IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM)*. IEEE, p. 827-832

### **Trajectory tracking for autonomous turf-care vehicle using Liouvillian approach**

Mai, C., Top, S. & Jouffroy, J., Sep 2018, *Proceedings of the 2018 IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM)*. IEEE, p. 1438-1443

### **Covering path generation for autonomous turf-care vehicle**

Mai, C., Jouffroy, J., Top, S. & Bjærre, M., 2017, *Proceedings of the 2017 IEEE International Conference on Advanced Intelligent Mechatronics*. IEEE, p. 346-351 8014041

### **Induction motor model with imbalance and leakage saturation**

Armah, K., Duggen, L. & Jouffroy, J., 2017, *Proceedings of the 2017 IEEE International Conference on Advanced Intelligent Mechatronics*. IEEE, p. 1520-1525

### **Infinite-Dimensional Boundary Observer for Lithium-Ion Battery State Estimation**

Hasan, A. & Jouffroy, J., 2017, In: *Energy Procedia*. 141, p. 494-501

### **Umbrella Wheel - a stair-climbing and obstacle-handling wheel design concept**

Iversen, S. & Jouffroy, J., 2017, *Proceedings of the 2017 International Conference on Advanced Mechatronic Systems*. IEEE, p. 312-317

### **Modeling Induction Motor Imbalances: A Non-DQ Approach**

Armah, K., Jouffroy, J. & Duggen, L., 2016, *Proceedings of the IEEE International Conference on Advanced Intelligent Mechatronics*. IEEE Press, p. 769-774

### **On Convergence of the Unscented Kalman-Bucy Filter using Contraction Theory**

Maree, J. P., Imsland, L. & Jouffroy, J., 2016, In: *International Journal of Systems Science*. 47, 8, p. 1816-1827

### **On the premature convergence of particle swarm optimization**

Larsen, R. B., Jouffroy, J. & Lassen, B., 2016, *2016 European Control Conference (ECC)*. IEEE Press, p. 1922-1927

### **Finite-time simultaneous parameter and state estimation using modulating functions**

Jouffroy, J. & Reger, J., 2015, *IEEE Conference on Control Applications*. IEEE, p. 394-399

### **Online optimization of different objectives in robotic sailing: simulations and experiments**

Wrede, D., Adam, J. & Jouffroy, J., 2015, *Proceedings of the IEEE Conference on Control Applications*. IEEE, p. 876-881

### **Internally actuated autonomous sailing buoy**

Jouffroy, J., Paasch, K. & Xiao, L., 25. Sep 2014, Patent No. PCT/DK2012/050402, 31. Oct 2012, Priority date 22. Sep 2015, Priority No. US9139272B2

### **Modeling and nonlinear heading control for sailing yachts**

Xiao, L. & Jouffroy, J., 2014, In: *IEEE Journal of Oceanic Engineering*. 39, 2, p. 256-268 13 p.

### **Transfer of Assembly Operations to New Workpiece Poses by Adaptation to the Desired Force Profile**

Nemec, B., Abu-Dakka, F., Rytz, J. A., Savarimuthu, T. R., Ridge, B., Krüger, N., Petersen, H. G., Jouffroy, J. & Ude, A., 25. Nov 2013, *Advanced Robotics (ICAR), 2013 16th International Conference*. IEEE Press, 7 p.

### **Development of flexible tactile sensors for hexapod robots**

Drimus, A., Børlum-Petersen, M. & Jouffroy, J., 21. Jan 2013, *Proceedings of the 15th International Conference on Mechatronics: Mechatronika 2012*. Maga, D., Stefek, A. & Brezina, T. (eds.). Czech Technical University, 7 p.

### **A convergence result for the unscented Kalman-Bucy filter using contraction theory: 2013 European Control Conference, ECC 2013**

Maree, J. P., Imsland, L. & Jouffroy, J., 2013, *2013 European Control Conference, ECC 2013*. IEEE, p. 2134-2139 6669183

**On active current selection for Lagrangian profilers**

Jouffroy, J., Zhou, Q. & Zielinski, O., 2013, In: Modeling, Identification and Control (Online). 34, 1, p. 1-10 10 p.

**Control and guidance of a hovering AUV pitching up or down**

Ferreira, B., Jouffroy, J., Matos, A. & Cruz, N., 2012. 6 p.

**Further results on tidal stream transport for Lagrangian profilers**

Han, D. & Jouffroy, J., 2012.

**Nonlinear Robust Heading Control for Sailing Yachts**

Xiao, L., Fossen, T. I. & Jouffroy, J., 2012.

**Online speed optimization for sailing yachts using extremum seeking**

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**Towards Heading Control of an Autonomous Sailing Platform through Weight Balancing**

He, J., Xiao, L. & Jouffroy, J., 2012.

**A control-theoretic outlook at the no-go zone in sailing vessels**

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**Modeling and nonlinear heading control for sailing yachts**

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**On Motion Planning for Point-to-Point Maneuvers for a Class of Sailing Vehicles**

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**Towards Selective Tidal-Stream Transport for Lagrangian profilers**

Jouffroy, J., Zhou, Q. & Zielinski, O., 2011, *OCEANS 2011, MTS/IEEE*. IEEE, 6 p.

**A tutorial on incremental stability analysis using contraction theory**

Jouffroy, J. & Fossen, T. I., 2010, In: Modeling, Identification and Control (Online Edition). 31, 3, p. 93-106 14 p.

**On path generation and feedforward control for a class of surface sailing vessels**

Xiao, L. & Jouffroy, J., 2010, *55th International Scientific Colloquium (IWK)*. p. 336-341 6 p.

**Real-time sail and heading optimization for a surface sailing vessel by extremum seeking control**

Treichel, K. & Jouffroy, J., 2010, *55th International Scientific Colloquium (IWK)*. Germany, p. 198-203 6 p.

**Reflexions on feedforward control strategies for a class of sailing vehicles**

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**A control strategy for steering an autonomous surface sailing vehicle in a tacking maneuver**

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**On algebraic time-derivative estimation and deadbeat state reconstruction**

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**On steering a sailing ship in a wearing maneuver**

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**Algebraische Ableitungsschätzung im Kontext der Rekonstruierbarkeit**

Reger, J. & Jouffroy, J., 2008, In: Automatisierungstechnik. 6

**An extended set-value observer for position estimation using single range measurements**

Marcal, J., Jouffroy, J. & Fossen, T. I., 2008.

**Proving Identities with Computer Algebra --Example: algebraic time-derivative example**

Reger, J. & Jouffroy, J., 2008, *Proceedings of the Annual Meeting of the International Association of Applied Mathematics and Mechanics*.

**Underwater navigation using diffusion-based trajectory observers**

Jouffroy, J. & Opderbecke, J., 1. Apr 2007, In: IEEE Journal of Oceanic Engineering. 32, 2, p. 313-326 14 p.

**Diffusion-Based Trajectory Observers with Variance Constraints**

Alcocer, A., Jouffroy, J., Oliveira, P. & Pascoal, A., 2007.

**Formation control of marine surface craft: a Lagrangian approach**

Ihle, I-A. F., Jouffroy, J. & Fossen, T. I., 1. Oct 2006, In: IEEE Journal of Oceanic Engineering. 31, 4, p. 922-934 13 p.

**A simple mechanical system for studying adaptive oscillatory neural networks**

Jouffroy, G. & Jouffroy, J., 2006.

**An algebraic perspective to single-transponder underwater navigation**

Jouffroy, J. & Reger, J., 2006.

**Robust combined position and formation control for marine surface craft**

Ihle, I-A. F., Jouffroy, J. & Fossen, T. I., 2006.

**Robust formation control of marine surface craft using Lagrange multipliers**

Ihle, I-A. F., Jouffroy, J. & Fossen, T. I., 2006, *Group Coordination and Cooperative Control*. Pettersen, K. Y., Gravdahl, T. & Nijmeijer, H. (eds.). Springer Science+Business Media, (Lecture notes in Control and Information Systems, Vol. 336).

**Towards station-keeping using GPI controllers**

Jouffroy, J., 2006.

**Diffusion-based outlier rejection for underwater navigation**

Vike, S. & Jouffroy, J., 2005.

**Formation control of marine craft using constraint functions**

Ihle, I-A. F., Jouffroy, J. & Fossen, T. I., 2005.

**Formation control of surface marine craft using Lagrange multipliers**

Ihle, I-A. F., Jouffroy, J. & Fossen, T. I., 2005.

**Remarks on the observability of single beacon underwater navigation**

Jouffroy, J. & Ross, A., 2005.

**Some ancestors of contraction analysis**

Jouffroy, J., 2005, *44th IEEE Conference on Decision and Control*. IEEE, p. 5450-5455 p.

**A trajectory observer for camera-based underwater motion measurements**  
Berg, T., Jouffroy, J. & Johansen, V., 2004.

**Methodological remarks on contraction theory**  
Jouffroy, J. & Slotine, J.-J. E., 2004.

**Nonlinear dynamic positioning of ships with gain-scheduled wave filtering**  
Torsetnes, G., Jouffroy, J. & Fossen, T. I., 2004.

**Nonlinear observer design for a nonlinear string/cable FEM model using contraction theory**  
Turkyilmaz, Y., Jouffroy, J. & Egeland, O., 2004.

**On the combination of nonlinear contracting observers and UGES controllers for output feedback**  
Jouffroy, J. & Fossen, T. I., 2004.

**Towards on-line underwater vehicle trajectory estimation using diffusion-based observers**  
Jouffroy, J. & Nguyen, T. D., 2004.

**Underwater vehicle trajectory estimation using contracting PDE-based observers**  
Jouffroy, J. & Opderbecke, J., 2004.

**A relaxed criterion for contraction theory: application to an underwater vehicle observer**  
Jouffroy, J., 2003.

**A simple extension of contraction theory to study incremental stability properties**  
Jouffroy, J., 2003.

**Real-time geo-referenced video mosaicking with the MATISSE system**  
Vincent, A-G., Pessel, N., Borgetto, M., Jouffroy, J., Opderbecke, J. & Rigaud, V., 2003.

**A remark on "Nonlinear output feedback control of underwater vehicle propellers using feedback from estimated axial flow velocity"**  
Jouffroy, J. & Lottin, J., 1. Oct 2002, In: IEEE Journal of Oceanic Engineering. 27, 4, p. 873-875 3 p.

**A few remarks on some forms of incremental stability (in French)**  
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**Emphasizing interdisciplinarity of control in laboratory courses: illustration with the inverted pendulum**  
Jouffroy, J. & Lottin, J., 2002.

**Integrator backstepping using contraction theory: a brief technological note**  
Jouffroy, J. & Lottin, J., 2002.

**Isolation filter using contraction theory (in French)**  
Join, C., Jouffroy, J., Ponsart, J-C. & Lottin, J., 2002.

**On the use of contraction theory for the design of nonlinear observers for ocean vehicles**  
Jouffroy, J. & Lottin, J., 2002.

**Control design on the basis of approximate nonlinear models: the inverted pendulum example**  
Jouffroy, J. & Lottin, J., 2000.

## **Activities**

**Technical Committee (TC) on Marine Systems of the International Federation of Automatic Control (IFAC) (External organisation)**

Jerome Jouffroy (Member)

18. Sep 2009 → ...