Morgan Louédec

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PhD in Marine Robotics, specialized in dynamical system analysis with interval analysis methods

EDUCATION AND QUALIFICATIONS

Since 2021	**Phd in Marine Robotics** at ENSTA Bretagne, LAB-STICC (CNRS, UMR 6285), Brest, France **-** *Stability analysis of the formation control of a group of underwater robots, using interval analysis*. - Guaranteed computation of positive invariant ellipsoids - Proof of stability for continuous-time, discrete-time and hybrid systems - Implementation of formation controllers on a group of ROVs
2019 - 2021	**Master of Science in English** in Electrical Engineering at the Technical University of Denmark (DTU) – *Automation and Robot Technology Specialization* Subjects studied: Control (Kalman filter, robust and fault tolerant control, model predictive control)**,** Image processing for autonomous systems, power supply, Entrepreneurship
2017 - 2021	**Student at Centrale Nantes** – *Robotics Specialization* – a highly selective French engineering school conferring a diploma equivalent to a Master's Degree Subjects studied: mechanic and control of vehicles / arms / drones / submarines, IT**,** camera usage**,** CAD, math, electronics

PROFESSIONAL EXPERIENCE

April 2019 – August 2019	**Internship period in Robotics** - MANSLU Ing. (Consulting company in energetically efficient building) - *Le Bourget du Lac France* - **Developing** the software of an autonomous robot for navigation, in C++ and Python with ROS - **Validating** the software on real prototypes
2016 – 2021 (Summer only)	**Sailing instructor,** Brest Bretagne Nautisme (sailing club) - *Brest France* - **Led** groups of 10 young people - **Taught** sailing lessons

TEACHING ASSISTANTSHIP

2023	ROS Middleware – MSc-level, ENSTA Bretagne
2021- 2023	Boat Swarm (Guerlédan) – MSc-level, ENSTA Bretagne
2022 - 2023	Actuator Sensor Loop – BSc-level, ENSTA Bretagne
2022	Numerical Electronics (Arduino) – BSc-level, ENSTA Bretagne
2021	Kalman filtering – MSc-level, ENSTA Bretagne

JOURNAL ARTICLES

2023 **Morgan Louédec, Luc Jaulin and Christophe Viel -** *Computational tractable guaranteed numerical method to study the stability of n-dimensional time-independent nonlinear systems with bounded perturbation* – Automatica, July 2023, volume 153

2021 **Morgan Louédec, Luc Jaulin -** *Interval Extended Kalman Filter – Application ot Underwater Localization and Control* - Automation and Robot Technology Specialization – Algorithms, 2021, 14, 142

CONFERENCE COMMUNICATIONS

June 2024 **Morgan Louédec, Luc Jaulin and Christophe Viel –** *Outer Enclosures of Nonlinear Mapping with Degenerate Ellipsoids* – in IFAC Conference on Analysis and Control of Nonlinear Dynamic and Chaos (ACNDC), London, UK, June 05-06-2024 (Winner of the Young Author Award)

CURRENTLY UNDER REVIEW

2024 **Morgan Louédec, Luc Jaulin and Christophe Viel –** *A guaranteed numerical method to prove the exponential stability of nonlinear discrete-time systems* - in IEEE Transactions on Automatic Control 2024 (Under Review)

COMPUTER SKILLS

Languages	Python, C++, Matlab, Simulink
CAD	Onshape, Solidworks
Other tools	ROS, Latex, PremierePro
Licence	Car, motor boat

LANGUAGES

French	Native
English	Fluent (Toelf iBT 105, Toeic 885)
Spanish	Working knowledge

INTERESTS

Improv **Member of an Improvisational theatre company (La Clique à Farce) –** 6 stage performances last year

Music **Casual bass guitar player**