Prof. Benoît CLEMENT
PhD, HDR

PERSONAL DATA

AGE:	49
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EDUCATION

2017 **Qualification for Professor** position CNU 61 section

2015 **HDR** (Accreditation to Supervise Research) in **Physics** at Université de Bretagne Occidentale, *Robust Control and Optimization*
Board of examiners:

- G. Coppin - Professor at IMT Atlantique (President and Supervisor),
- D. Dumur - Professor at CentraleSupélec - LSS CNRS (Reviewer),
- E. Laroche - Professor at University of Strasbourg (Reviewer),
- J. Mignot - GNC senior expert at CNES (Reviewer),
- L. Jaulin - Professor at University de Bretagne Occidentale,
- A. Mansour - Professor at ENSTA Bretagne.

2001 **PhD** in **Physics** at Université Paris XI funded by the *French Space Agency* and *ArianeGroup*, *Aerospace Launcher Control Methodologies*
Board of examiners:

- D. Normant-Cyrot - Directeur de Recherche CNRS LSS (President),
- S. Monaco - Professor at Sapienza, Univerista di Roma (Reviewer),
- J. Bernussou - Directeur de Recherche at LAAS CNRS (Reviewer),
- G. Duc - Professor at Supélec (Supervisor),
- A. Biard - CNES,
- S. Mauffrey - Airbus Launcher.

1998 **Ingénieur Supélec** (Automatic Control and System Design).

1998 **M.Sc in Automatic Control and Signal Processing** at Université Paris-Saclay.

Actual Positions

Since 2022	**Researcher** at the International Research Laboratory **CROSSING in Adelaide**, joint lab between CNRS, IMT Atlantique, University of Adelaide, University of South Australia, Flinders University and Naval Group. Research project concerning Collision Avoidance between autonomous systems.
Since 2022	**Head of Information Science and Engineering Department** at **ENSTA Bretagne** Staff : 120 people (50 researchers / 70 engineers, PhD and Post-Doc) Annual budget : 800k€
Since 2017	**Full Professor at ENSTA Bretagne and Researcher at Lab-STICC** Teaching Automatic Control and Robotics (200h/year); Member of CNRS Laboratory Lab-STICC UMR 6285;
Since 2020	**Professor at Flinders University, Adelaide, Australia** College of Science and Engineering (CSE) and Centre for Maritime Engineering, Control and Imaging Topics: Adaptive Control for Marine Robots using Artificial Intelligence: algorithms and experiments
Since 2018	**co-Head of SENI Lab** with Gregory Bartoli and Estelle Chauveau (Naval Group) Joint Research Lab between ENSTA Bretagne and Naval Group about Intelligent Embedded Naval Systems.

Past Positions

2020-2022	**Steering Committee of CORMORANT** Joint Scientific Group between Lab-STICC, IRENav, LabISEN and THALES about COllaboration for Research regarding Maritime technologies, Observation, security, suRveillANce with Thales.
2019-2022	Expert with **Images&Réseaux** cluster, the benchmark competitiveness cluster for digital innovation in the Pays de la Loire and Brittany regions. Member of the Selection and Validation Committee.
2017-2021	**Deputy Head of Lab-STICC (UMR CNRS 6285) at ENSTA Bretagne** Staff : 280 researchers / 240 engineers, PhD and Post-Doc (35/55 at ENSTA Bretagne) Topics: Electromagnetism, antennas, embedded systems, electronics, knowledge, information and decision applied to Ocean, Cybersecurity, UAVs, Assistive Technologies, Neuro Inspired Computational Sciences.
2019-2020	**Visiting Professor at Flinders University, Adelaide, Australia** Position funded by ERE Program from AID (Defense Agency of Innovation from DGA) and Region Bretagne in cooperation with Prof. Karl SAMMUT at the Centre for Maritime Engineering, Control and Imaging Topics: Adaptive Control for Marine Robots using Artificial Intelligence: algorithms and experiments
2014-2017	**Head of Ocean Sensing and Mapping team (ENSTA Bretagne)** Staff : 17 researchers / 21 engineers, PhD and Post-Doc Topics: Research activities: Robotics, Data Processing for marine applications
2009-2017	**Associate Professor at ENSTA Bretagne and Researcher at Lab-STICC** Teaching Automatic Control and Robotics (200h/year); Member of CNRS Laboratory Lab-STICC UMR 6285; Head of Scientific Scuba Diving team.
2011-2016	**Pôle Mer Bretagne Atlantique (Maritime Cluster)** Project Manager, Engineering and Coordinating Team for *Maritime Safety and Security* topic.
2002-2008	**Project Manager at CNES (French Space Agency)** Project: Ariane 5 adaptation for the ATV mission; Expert for Guidance, Control and Navigation (GNC) activities; In charge of the Research transfer from universities to space industry.
1998-2001	**Associate Professor at Supélec** PhD (1998-2000) and Associate Professor (2000-2001).

Research topics

Topics

Robotics: Autonomous Underwater and Surface Vehicle, Embedded systems, Robots prototyping, Swarm

Control: Robust Control, Adaptive Control, Optimisation, Path planning, structured synthesis and analysis, Reinforcement Learning.

Application: Maritime systems, Aerospace, Medical applications.

Grants

(excluding PhD funding)

SHIVA (2022-2026): *Optimisation and control of a marine cycloidal thruster* funded by AID. Project with Matthieu Sacher (ENSTA Bretagne) and Frederic Hauville (Ecole Navale - French Marine Academy). The objective is to optimise the hydrodynamic performance of a 100% electric cycloidal thruster, with a wide variety of kinematics, by maximising the propulsive force and efficiency through a multi-model numerical-experimental approach.

AID ERE (2020): Adaptive Control strategies for Marine Systems with Flinders University funded by *AID Agence Innovation de Défense* .

COCHON (2021): *Cooperative Control for Hazardous Occurrences in Navigation* funded by Thales in cooperation with IMT Atlantique. Project leader. The aim of the project is to propose new strategies for a rendez-vous in cooperative mode or non-cooperative mode.

RoFiCom (2020-2023): *Robustesse et fiabilité de loi de commande adaptative* funded by AID. Project with Jordan Ninin. It proposes a new simplified methodology to synthesise control laws for AUVs and maritime vessels, while providing mathematical guarantees on robustness, reliability, safety and performance.

AID ERE (2020): Adaptive Control strategies for Marine Systems with Flinders University funded by *AID Agence Innovation de Défense* .

CAM (2020): Adaptive Control strategies for Underwater Autonomous Robots with Flinders University funded by *Region Bretagne*.

SENI (2019-2024): *Systèmes Embarqués Naval Intelligents*: Common Lab between ENSTA Bretagne and Naval Group. Project leader. This lab objective is to propose new approaches to make UxV more efficient and smarter.

NAVIDRO (2018-2019): The project proposes a State of art and a simulator for the precise navigation of AUVs for hydrography. Research contrat with SHOM . Project leader.

ECGWifi (2016-2018): the project proposes a prototype of an portable ECG device for operating room, in cooperation with CHRU Brest.

SWARMS (2012-2015): Management system of UAVs for monitoring, PICS CNRS with Australia.

3I and BERISUAS (2012-2016): Integrated Coastal Zone Management via Increased situational awareness though Innovations on Unmanned Aircraft Systems - European Projects (partner with TU Delft, University of Southampton, Rewin, IMT Atlantique)

Handivoile (2012-2014): Sailboat robotisation project helping disabled people to sail with a joystick and a smartphone interface. cooperation with Splashelec, (project coordinator)

Vaimos (2010-2013): Autonomous sailboat collecting multidisciplinary ocean data with IFREMER

PIROLA (2000-2009): Robust Control for Launchers. Long term project to produce an overvew about control and future launchers) CNES funding with Supélec, LAAS, ONERA, Supaero, Airbus Launchers. (project coordinator)

International cooperations

UK: Queen Mary University of London with Prof. Kaspar Althoefer. The cooperation is about robust control applied soft robotics. Starting in 2021 by a joint PhD.

China: Ocean University of China in Qingdao with Prof. Li Ming and Dr. Yang Rui. Robust control applied to marine robotics;

Visiting Professor for 2x1 month (2014-2015)

Argentina: Universidad Nacional de La Plata with Prof. Fabrico Garelli. Sliding Mode strategies applied to underwater robotics;

Visiting Professor for 2x3 weeks (2017 and 2019)

Australia: Flinders University at Adelaide with Prof. Karl Sammut about Guidance, Navigation and Control strategies applied to marine robotics.

Invited Professor with DGA support for 8 months in 2020.

Libanon: American University of Culture and Education Prof. Abbass Nasser about Autonomous Modular Robotic Systems.

Algeria: AVCIS Research Laboratory, Department of Automatics, Faculty of Electrical Engineering, USTO-MB, Oran, with Prof. M. Bouhamida about underwater robot for submarine inspection.

PhD and Postdoc Supervision

Current

K. Lagattu: joint PhD ENSTA Bretagne/Flinders University with Naval Group funding, starting in 2022 and co-supervised with Prof. Karl Sammut, Dr. Gilles Le Chenadec and Dr. Eva Artusi

Fault Detection Control of underwater robots with Machine Learning

D.M. Kaleel: joint PhD ENSTA Bretagne/Queen Mary University of London with DSTL/DGA funding, starting 2021 and co-supervised with Prof. Kaspar Althoefer

Using machine learning techniques to optimise the motion performance of soft robots physically interacting with their environment

K. Karam: PhD at ENSTA Bretagne and Balamand University (Libanon), starting 2021 and co-supervised with Prof. Ali Mansour and Prof. Mohamad Khaldi)

UAV Routing Protocol for Crop Health Management

A. Haidar: PhD at ENSTA Bretagne and AUCE (Libanon), starting 2021 and co-supervised with Dr. Abbass Nasser

Intelligent Traffic Mechanisms for Optimizing Path Planning and Adapting Control of UAV

A. Olivier: PhD at ENSTA Bretagne in cooperation with CHRU Brest, starting in 2020 and co-supervised with Prof. Ali Mansour, Prof. Luc Bressollettes and Dr. Clement Hoffmann)

Deep Learning and Méthodes Statistiques pour la caractérisation d'une Thrombose Veineuse Profonde par échographie et élastographie

Q. Ferdinand: joint PhD with Lab-STICC and Naval Group, starting in 2020 and co-supervised with Dr. Gilles Le Chenadec, Dr. Panagiotis Papadakis, Dr. Quentin Oliveau)

Incremental Learning for Classification of Objects of Interest

Past

D. Ioan: Post-Doc 2022 part of **RoFiCom** project funded by AID and co-supervised with Jordan Ninin.

Optimisation/Control: Robustess and relibility of Adaptive control law.

T. Chaffre: PhD 2022 at ENSTA Bretagne/Flinders University with Brittany Region, South Australia and Naval Group funding, co-supervised with Prof. Karl Sammut, Prof. Paulo Santos, Dr. Gilles Le Chenadec and Dr. Estelle Chauveau

Adaptive Control of underwater robots with Machine Learning

A. Majed: PhD 2022 at ENSTA Bretagne and AUCE (Libanon), co-supervised with Dr. Abbass Nasser and Dr. Hassan Harb

Sensing-based Self-Reconfigurable Strategies for Autonomous Modular Robotic Systems.

Y. Sola: PhD 2021 at ENSTA Bretagne with DGA and Region Bretagne funding and co-supervised with Dr. Gilles Le Chenadec - now Data Scinetis at CMB.

Contributions to the development of Deep Reinforcement Learning-based controllers for AUV

A. Lefort: PhD 2020 with ENSTA Bretagne and Naval Group Research - co-supervised with Jordan Ninin - now Engineer at Sirenha.

Structured Robust Control applied to ships autopilot taking into account experimental data.

X. Wang: PhD 2019 (China) and 2021 (France) joint PhD with ENSTA Bretagne and Ocean University of China (in Qingdao) - co-supervised with Benoit Zerr and Helene Thomas

Pattern formation of multi-AUV system with optical sensors.

J.L. Rosendo: PhD 2019 joint PhD with ENSTA Bretagne and Universidad Nacional de La Plata (Argentina) - co-supervised with Prof. Fabricio Garelli,

Techniques robustes de contrôle automatique. Application aux systèmes robotiques et des processus industriels avec restrictions.

D. Monnet: PhD 2018 at ENSTA Bretagne with DGA and Brest funding (co-supervised with Jordan Ninin),

Global minmax optimization for robust H_∞ control.

R. Keyetieu: PhD 2018 at ENSTA Bretagne with DGA and SHOM support (co-supervised with Pierre Bosser) now Research Scientist with Geown France,

Calibration of Multi-Beam Echo Sounder systems by inverse methods.

Past as co-advisor

Y. Rui: PhD 2015 (Director: Ali Mansour) now Associate Professor at Ocean University of China (in Qingdao)

Modeling and Robust Control Approach for Autonomous Underwater Vehicles.

B. Huard: Post Doc 2013-2014 at OSM for 3i Project Associate Professor at University of Poitier

Modélisation pour la commande d'un drone aérien de surveillance maritime

M. Abbas-Turki: PhD 2005 (Director: G. Duc) now Associate professor - SATIE at ENS Cachan

Etude de faisabilité d'un cahier des charges en automatique : application au pilotage d'un lanceur spatial.

O. Voinot: PhD 2002 (Director : D. Alazard) now Managing Director at Simodont

Développement de méthodologies de synthèse de loi de commande pour le pilotage des lanceurs.

A. Constantinescu: PostDoc 2002 now Project Manager with CAE (Canadian Aeronautics & Space Institute)

Intégration de nouveaux algorithmes de pilotage pour les lanceurs.

A. Maloum: PostDoc 2001 at Supélec

Commande non-linéaire pour les lanceurs spaciaux

PhD on going	PhD Total	Post Doc on going	PostDoc Total
8	17	1	4

Table 1: Supervising recap

Committees

PhD and HDR

2022 - PhD committee of **A. Milot**,

Algorithms and architectures for the control of zone exploration by a fleet of autonomous underwater vehicles, INSA, University of Toulouse.

2022 - PhD committee of **A. Mitriakov** as President,

Modèles d'interaction physique de robots compagnons, IMT Atlantique.

2021 - PhD committee of **A. Shehu** as reviewer and President,

Commande robuste non linéaire de robots sous marins, Université de Montpellier.

2021 - PhD committee of **O. Tortorici** as reviewer,

Conception et contrôle automatique d'un ombilical instrumenté pour robots sous-marins, Université de Toulon.

2021 - PhD committee of **A. Bourdelle** as reviewer,

Contributions méthodologiques à la modélisation et à la compensation des ballottements d'ergol pour le contrôle en attitude des véhicules spatiaux, Université de Toulouse.

2020 - PhD committee of **M. Trehin**,

Pilotage automatique des bateaux volants: algorithmes dynamiques et multicritères, Université Bretagne Sud.

2020 - PhD committee of **N. Michel**,

Invariant set design for the constrained control of a quadrotor, Université Paris-Saclay.

2019 - HDR committee of **L. Burlion** as reviewer,

Commande et observation non linéaires des systèmes aéronautiques et spaciaux, Université de Toulouse.

2018 - PhD committe of **H. El Fawal**,

Machine-to-Machine Congestion Mechanism, Université Bretagne Loire.

2018 - HDR committee of **C. Pittet** as reviewer,

Le contrôle d'attitude des satellites, support et projet de recherche en automatique, Université de Toulouse.

2016 - PhD committee of **H. Zeberi** as reviewer,

H_∞ Linear Parameter Varying Controllers Order Reduction. Application to semi-active suspension control, Université Haute-Alsace.

2003 - PhD committee of **P. Langouët**,

Sur la stabilité locale des systèmes linéaires soumis à des actionneurs limités en amplitude et en dynamique, Université de Toulouse 3.

CSI

PhD supervisory committee

M. Neau: Multi-modal Analysis of Human-Object Interactions by a Socially Aware Agent: Detecting and Fulfilling Needs (with C. Buche, A.G. Bosser, P. Santos, K. Sammut) - ENIB and Flinders University

C. Roussel: Approche stochastique pour la diffusion électromagnétique par des surfaces de mer dynamiques: application à la synthèse d'ouverture très haute résolution (with A. Baussard and A Coatanhay) - ENSTA Bretagne

M. Trehin: Pilotage automatique des bateaux volants : Algorithmes dynamiques et multicritère (with J. Laurent and J.P. Diguet) - Université de Bretagne Sud.

M. Almasri : Théorie des jeux pour les communications militaires tactiques (with Ali Mansour) - ENSTA Bretagne.

H. Baccouri : Modèles d'architecture et générateur de code adaptatif et reconfigurable pour les systèmes de contrôle de processus en environnement incertain (with J.P. Babau and G. Guillou) - Université de Bretagne Occidentale.

M. Boukoberine : gestion optimale de l'énergie embarquée en vu de prolonger l'autonomie des drones (AUVs pour l'inspection de sites de type fermes PV, éoliennes ou pylônes HT) utilisant une pile à combustible (with M. Benbouzid and Z. Zhou) - Université de Bretagne Occidentale.

Recruitment& Member of selection committee

2023	2 MCF positions in Acoustic Systems and Robotics at ENSTA Bretagne - Lab-STICC
2022	PR position in Marine Robotics at Montpellier University
2020	MCF position in IA and Ocean at Brest University
2018	MCF position in Robotics at ENSTA Bretagne
2015	MCF position in Hydrography at ENSTA Bretagne

Miscellaneous activities

- French Media & Networks cluster *Selection and Validation Committee* member since 2020
- *Nuit Européenne des Chercheurs* and *Fête de la Science*, annual participation for Lab-STICC activities
- MOQESM workshop organizing committee (every 2 years)
- IFAC Aerospace Technical Committee (2001-2009);
- IFAC Marine Systems Technical Committee (since 2020);
- International Robotic Sailing Conference Committee (since 2012);
- *Reviewer* for various Journals ans Conferences (between 5 and 10 reviews by year);
- Expert for companies as Airbus Defence and Space, Heraklion, DGA;
- Expertise for ANR, Fondation Franco-Novégienne, France Energie Marine;
- Participation at GT MOSAR (Méthodes et Outils pour la Synthèse et l'Analyse en Robustesse) / GdR MACS (Modélisation, Analyse et Conduite des Systèmes Dynamiques);
- Participation and event organisation for GdR Robotique (Marine Robotics group);
- Scientific Committee for Réseau Thématique Pluridisciplinaire (RTP) *Systèmes Aéronautiques et Spatiaux* from CNRS;
- ISAE Conseil de Perfectionnement member (2014-2018).

Teaching Activities

Pedagogic responsibilities at ENSTA Bretagne:

- Responsible of the first year program from 2009 to 2015.
- Responsible of Robotic speciality from 2012 to 2016.
- In charge of Bibliography project from 2010 to 2015.
- participation for Online Automatic Control course initiative (starting 2021)

Lessons

ESIEA - Paris	1999-2005 Identification for dynamic systems (3A) (with Stéphane Font) 10h/year
Supélec - Gif-sur Yvette	2000-2003 System modelling (3A) and Optimisation (3A) 15h/year
Supaéro - Toulouse	2001-2009 Space Systems Conception (2A) (with CNES team) 10h/year
Estaca - Paris	2001-2009 Space Systems Conception (3A) (with CNES team) 10h/year
ENSTA Paris	1998-2008 Automatic control (with Laurent El Ghaoui, Jean-Pierre Folcher, Ramine Nikoukah) 20h/year
Centrale Paris	1999-2002 Automatic Control (with Nicolas Petit) 20h/year
ENIB - Brest	2012-2016 Control for Mobile Robots 10h/year
ENSTA Bretagne - Brest	nearly 200h/year since 2010 Control Methods (Bachelor and Master) • Mobile Robotics(3A) • Kalman filter (3A) • Robust Control (3A) • Classical Control (1A et 3A) • Projects

Annee	Enseignements (heures)	Responsabilites et decharges (heures)	Total (heures)
2017-2018	175	90	265
2018-2019	169	110	279
2019-2020	92	113	205
2020-2021	143	117	260
2021-2022	159	74	233
2022-2023	15	110	125

Table 2: Last 5 years teaching recap (2017-2023)

Publications

Journal papers

[1] A. Majed, H. Harb, A. Nasser, B. Clement, and O. Reynet. RUN: a robust cluster-based planning for fast self-reconfigurable modular robotic systems. *Intelligent Service Robotics*, 2023.

[2] Y. Sola, G. Le Chenadec, and B. Clement. Simultaneous Control and Guidance of an AUV Based on Soft Actor-Critic. *Sensors*, 22(16), 2022.

[3] G. Fodop, A. Olivier, C. Hoffmann, A. Mansour, S. Jousse-Joulin, L. Bressollette, and B. Clement. Siamese network for salivary glands segmentation. *Intelligent Decision Technologies*, pages 449–457, 2022.

[4] T. Chaffre, J. Moras, A. Chan-Hon-Tong, J. Marzat, K. Sammut, G. Le Chenadec, and B. Clement. Learning-Based vs Model-Free Adaptive Control of a MAV Under Wind Gust. *Informatics in Control, Automation and Robotics*, pages 362–385, 2022.

[5] J.L. Rosendo, D. Monnet, H. De Battista, J. Ninin, B. Clement, and F. Garelli. A global optimization approach for sliding mode tuning and existence maps generation. *International Journal of Dynamics and Control*, October 2020.

[6] Kahina Bensafia, Ali Mansour, Abdel-Ouahab Boudraa, Salah Haddab, Philippe Ariès, and Benoit Clement. Blind separation of ECG signals from noisy signals affected by electrosurgical artifacts. *Analog Integrated Circuits and Signal Processing*, 2020.

[7] A. Majed, H. Harb, A. Nasser, B. Clement, and O. Reynet. Sensing-based self-reconfigurable decision-making mechanism for autonomous modular robotic system. *IEEE Sensors Journal*, 2020.

[8] Xiaomin Wang, Benoît Zerr, helene Thomas, Benoit Clement, and Zexiao Xie. Pattern formation of multi-AUV systems with the optical sensor based on displacement-based formation control. *International Journal of Systems Science*, 51(2):348–367, January 2020.

[9] X. Wang, L. Benozzi, B. Zerr, Z. Xie, H. Thomas, and B. Clement. Formation building and collision avoidance for a fleet of NAOs based on optical sensor with local positions and minimum communication. *Science China - Information Sciences*, 2019.

[10] Juan Luis Rosendo, Benoit Clement, and Fabricio Garelli. Experimental validation of constraint mitigation algorithm in underwater robot depth control. *Proceedings of the Institution of Mechanical Engineers, Part I: Journal of Systems and Control Engineering*, 233(3):264–275, 2019.

[11] Philippe Ariès, Kahina Bensafia, Ali Mansour, Benoit Clement, Jean-Louis Vincent, and Ba Vinh Nguyen. Design and Evaluation of a Wireless Electrocardiogram Monitor in an Operating Room. *Anesthesia and Analgesia*, page 1, 2018.

[12] R. Keyetieu, N. Seube, V. Djine, G. Roue, B. Clement, and P. Bosser. Multi-beam echo sounders-INS automatic latency calibration. *Marine Geodesy*, pages 1–17, 2018.

[13] K. Bensafia, A. Mansour, G. Le Maillot, B. Clement, O. Reynet, P. Ariès, and S. Haddab. Wireless based system for continuous electrocardiography monitoring during surgery. *International Journal of Biomedical and Biological Engineering*, 11(10):571 – 577, 2017.

[14] P. Aries, O. Reynet, B. Clement, and V. Nguyen. Another stone to the edifice of wireless anesthesia. *Anesthesia and Analgesia*, 123:1062–1063, 2016.

[15] D. Monnet, J. Ninin, and B. Clement. *Mathematical Aspects of Computer and Information Sciences*, chapter Global Optimization of H_∞ Problems: Application to Robust Control Synthesis Under Structural Constraints, pages 550–554. Springer International Publishing, Cham, 2016.

[16] R. Yang, B. Clement, A. Mansour, M. Li, and N. Wu. Modeling of a complex-shaped underwater vehicle for robust control scheme. *Journal of Intelligent and Robotic Systems*, pages 1–16, 2015.

[17] B. Zerr, L. Jaulin, V. Creuze, N. Debese, I. Quidu, B. Clement, and A. Billon-Coat. *Results of the International Marine Science and Technology Event MOQESM'14*. Springer, 2016.

[18] B. Clement. Robust constraint feasibility by convex optimization and interval analysis. *European Journal of Automation*, 46(4-5):381–395, 2012.

[19] M. Abbas-Turki, G. Duc, and B. Clement. Multiobjective synthesis using LMI formulations for application of the cutting plane algorithm. *European Journal of Control*, 12(1), 2006.

[20] D. Arzelier, B. Clement, and D. Peaucelle. Multi-objective H_2/H_∞/Impulse-to-Peak control of a space launch vehicle. *European Journal of Control*, 12(1), 2006.

[21] M. Abbas-Turki, G. Duc, and B. Clement. Retouche de correcteur multiobjectifs par optimisation convexe : Application au pilotage d'un lanceur spatial. *Journal Européen des Systèmes Automatisés*, 40(9-10), 2006.

[22] B. Clement, G. Duc, and S. Mauffrey. Aerospace launch vehicle control: a gain scheduling approach. *Control Engineering Practice*, 12(3), 2005.

[23] O. Voinot, D. Alazard, P. Apkarian, S. Mauffrey, and B. Clement. A discrete time robust multi-objective synthesis applied to launcher attitude control. *Control Engineering Practice*, 11, 2003.

[24] B. Clement, S. Hbaieb, G. Duc, and S. Font. Parametrisation de Youla : application a la commande robuste par optimisation convexe. *Journal Europeen des Systemes Automatises*, 35(1-2), 2001.

Conference papers

[1] A. Olivier, C. Hoffmann, A. Mansour, L. Bressollette, and B. Clement. Fusion of images and clinical features for the prediction of pulmonary embolism in ultrasound imaging. In *22nd IEEE Statistical Processing Workshop*, Vietnam, 2023.

[2] A. Haidar, O. Zahwe, A. Nasser, and B. Clement. Path planning algorithms for unmanned aerial vehicle: Classification, performance, and implementation. In *Proc. of the International Conference on Electrical, Computer, Communications and Mechatronics Engineering (ICECCME 2023)*, Spain, 2023.

[3] H. Kohler, T. Chaffre, G. Le Chenadec, and B. Clement. PID Tuning using Cross-Entropy Deep Learning: a Lyapunov Stability Analysis. In *14th IFAC Conference on Control Application on Marine Systems*, Denmark, 2022.

[4] K. Karam, M.R. Khaldi, M. Ammad Uddin, B. Clement, and A. Mansour. Security protocols in drones: Issues and challenges. In *Security Protection of Information 2022 (SPI22)*, Grenoble, 2022.

[5] Q. Ferdinand, Q. Oliveau, G. Le Chenadec P. Papadakis, and B. Clement. Attenuating catastrophic forgetting by joint contrastive and incremental learning. In *IEEE / CVF Computer Vision and Pattern Recognition Conference (CVPR)*, New Orleans, 2022.

[6] D. Ioan, J. Ninin, and B. Clement. Nested branch-and-bound algorithm for min-max problems. In *Optimizations Days*, Montreal, 2022.

[7] D.M. Kaleel, B. Clement, and K. Althoefer. Underwater eversion robot growth for underwater operations with an emphasis on underwater mine hunting. In *IEEE UK&I RAS Conference*, UK, 2022.

[8] T. Chaffre, G. Le Chenadec, K. Sammut, E. Chauveau, and B. Clement. Direct adaptive pole-placement controller using deep reinforcement learning: Application to auv. In *13th IFAC Conference on Control Application on Marine Systems*, Germany, 2021.

[9] D. Monnet, J. Ninin, and B. Clement. Robust structured h_2 synthesis for linear systems subject to time-invariant uncertainties with global optimization. In *13th IFAC Conference on Control Application on Marine Systems*, Germany, 2021.

[10] A. Olivier, A. Mansour, C. Hoffmann, L. Bressollette, and B. Clement. Survey on machine learning applied to medical image analysis. In *14th International Congress on Image and Signal Processing, BioMedical Engineering and Informatics*, Shanghai, 2021.

[11] Jordan Ninin, Dominique Monnet, and Benoit Clement. Nested branch-and-bound algorithm for minmax problem and constraints with quantifiers. In *EUROPT 2021, the 18th international workshop on continuous optimization*, Toulouse, France, 2021. continuous optimization working group of EURO.

[12] Y. Sola, T. Chaffre, K. Sammut, Gilles Le Chenadec, and B. Clement. Robust guidance and control of autonomous underwater vehicles with deep reinforcement learning. In *IEEE Oceans Conference*, Singapore, 2020.

[13] A. Laidani, M. Bouhamida, M. Benghamen, K. Sammut, and B. Clement. A low-cost test bench for underwater thruster identification. In *12th IFAC Conference on Control Application on Marine Systems*, Daejeon, Korea, 2019.

[14] A.M. Yazdani, K. Sammut, A. Lammas, O.A. Yakimenko, and B. Clement. Cooperative guidance system for auv docking with an active free-floating docking station. In *IEEE Oceans Conference*, Marseille, France, 2019.

[15] P. Benet, F. Novella, M. Ponchart, P. Bosser, and B. Clement. State-of-the-art of standalone accurate AUV positioning - application to high resolution bathymetric surveys. In *IEEE Oceans Conference*, Marseille, France, 2019.

[16] R. Yang, Y. Liu, D. Monnet, B. Clement, and A. Mansour. Structured H_∞ regulations applied to auv yaw control. In *IEEE Oceans Conference*, Marseille, France, 2019.

[17] Y. Sola, G. Le Chenadec, K. Sammut, and B. Clement. Auto-tuning PID controller based on machine learning algorithms for robust control of autonomous underwater vehicles. In *IEEE Oceans Conference*, Marseille, France, 2019.

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Journals	Conferences	Others	Total
24	74	16	116

Table 3: Total publications (1999-2023)