Keywords: Dynamical Systems, Automatic Control, Robust Control, Artificial Intelligence, Optimization, Neural Networks, Identification, Signal Processing
Administrative status: Associate/Assistant Professor, civil servant of the French Ministry of Economy and Industry

Presentation of the school

IMT Atlantique, internationally recognized for the quality of its research, is a leading general engineering school under the aegis of the Ministry of Industry and Digital Technology, ranked in the 3 main international rankings (THE, SHANGAI, QS)

Situated on 3 campuses, Brest, Nantes and Rennes, IMT Atlantique aims to combine digital technology and energy to transform society and industry through training, research and innovation. It aims to be the leading French higher education and research institution in this field on an international scale. With 290 researchers and permanent lecturers, 1000 publications and 18 M€ of contracts, it supervises 2300 students each year and its training courses are based on cutting-edge research carried out within 6 joint research units: GEPEA, IRISA, LATIM, LABSTICC, LS2N and SUBATECH.

Presentation of the scientific field

The Automation, Production and Computer Sciences department (french acronym DAPI) of IMT Atlantique is recruiting a research lecturer specialized in the fields of Automatic Control for its Control team.

The Department DAPI is based on Nantes campus. It has about 110 staff including 44 permanent lecturer-researchers, distributed through three research groups. The department is involved in the lab of digital sciences in Nantes, LS2N (« Laboratoire des Sciences du Numérique de Nantes », UMR CNRS 6004).

You will join the Robotics, Automatic Control and Interactions group of the department, more precisely the Control Team. Collaborations with other teams of the department or more generally the LS2N will be strongly encouraged. The control team is well-known for its theoretical and methodological developments. Main results are about robust and optimized control or diagnosis solutions, applied to dynamical systems. Taking benefits from these results, industrial applications are frequently addressed, especially in the transportation sector; road transportation with driving assistance systems or autonomous vehicles, sea transport (e.g. energy optimization or sails control for cruise ships of next generation). Current projects are also about agricultural robots / cobots. The team has also several activities in the energetic sector; smart-grid optimization, nuclear plant control…
In this context, to join our teams:

Teaching

In the department, as a research lecturer, you will fulfil the main rôles of training, research and development in academic and industrial circles, as well as internationally.

A large part of the teaching activities will be in the first year of graduate engineering school; in particular, you will be strongly involved in the course named “Analysis, Signal Processing and Automatic Control”, where you will teach the basics of these three disciplines. You will teach also basics of analog and digital electronic, and will supervise practical labs or projects.

Otherwise you will be involved in the majors “Automatic Control and Cyber-Physical Systems” or “Robotics and Interactions”. You will have to teach identification and diagnosis (courses and labs) including tools based on neural networks, and also robust control (labs). You will be also strongly involved in teachings concerning “embedded systems”.

Finally, you will be involved in the design of a new work-study program in industry 4.0. In particular, you will have to coordinate teaching on automatic control.

Your significant experience in designing and supervising teaching activities will allow you to promote learning by confronting learners with multidisciplinary problems. You are particularly interested in the competency-based approach, innovative teaching methods and the diversification of assessment methods.

Your command of English is strong enough to teach in this language.

Research

You will do your research in the Control team, interested in robust control, estimation theory and diagnosis.

You will have strong skills in the fields of dynamical systems, signal processing, automatic control, estimation or diagnosis. You have also a first experience about artificial intelligence, deep learning approaches, or you are strongly motivated to progress on that topic. On the speculative and methodological field, you will bring your vision on the possible ways to remove certain locks among the most essential for controlling industrial or biological systems: i) widening of the class of dynamic systems which it is possible to apprehend effectively, ii) realistic methods of managing the constraints on the inputs and states of the system, iii) new methods of efficient learning, in connection with developments in Artificial Intelligence

Your scientific skills and your experience in project management will enable you to develop and participate in partnerships with partners from the economic and academic world, at regional, national and international levels.

Currently, research topics and industrial partnerships are in the transportation sector, energetic management and robotics. On the transportation topic, current research works are on intelligent vehicles (autonomous ones, or with high level driving assistance). Concerning energy management, the team contributes mainly on methodological results dealing with multi-energy systems, from the optimization of energy consumption to the control of large-scale systems. Finally, on the robotic applications, human-machine cooperation is currently the main topic. In the short term, you will be involved in the scientific supervisory of PhD, working on AI embedded in agricultural robots (autonomous vehicles).
You will contribute to the development and influence of the school through high-level publications, a proactive attitude to contract negotiation and an active contribution to the life of the school.

You are really dynamic and know how to develop synergies and manage projects in training and research in a multidisciplinary environment. Sensitive to the challenges of sustainable development and social responsibility, you act in an ethical and responsible manner and have demonstrated that these dimensions are taken into account in the projects you have carried out.

The post is based on the Nantes campus. Travel in France and abroad is to be expected.

You will be asked to submit an integration project for all the tasks described to demonstrate your motivation for the job.

(for more information on the selection criteria, consult the job description of a lecturer-researcher – Associate Professor, Assistant Professor/Senior Lecturer/ on the school website)

**Level of training and/or experience required:**
- Doctorate in the field of Automatic Control and Signal Processing, Applied Mathematics.

**Additional information**
You can contact:
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Philippe Chevrel, head of research control team – philippe.chevrel@imt-atlantique.fr – tél : 02 51 85 83 40


**To submit your application:**
Please collect a registration form from the Human Resources Department:

Florence MOULET- florence.moulet@imt-atlantique.fr - tel: 02 51 85 85 83 63
or
Jean-Philippe ROULLAND - jean-philippe.roulland@imt-atlantique.fr - tel: 02 51 85 83 83 54

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