


IMT Mines Alès
École Mines-Télécom


SCIENCE & CREATIVITY TO INVENT A SUSTAINABLE WORLD

NOUS RECRUTONS

Postdoctoral Fellow in Trustworthy Deep Learning on Time Series

Institution:	IMT Mines Alès (National School of Mines of Alès)
Main assignment:	Center for Teaching and Research in Computer Science and Systems (CERIS) – SyCoIA
Administrative residence:	Alès (Gard department – Occitanie region)
Type of contract:	15-month fixed-term contract – Public law contract – Full-time
Start date:	May 4, 2026

1. Presentation of our institution, the Center for Teaching and Research in Computer Science and Systems (CERIS)

1.1. The Institut Mines-Télécom

The Institut Mines-Télécom (IMT), a major institution under the French Education Code, is a public scientific, cultural, and professional institution (EPSCP) under the primary supervision of the ministers responsible for industry and digital technology. The leading group of engineering schools in France, it brings together 11 public engineering schools spread across the country, which train 13,500 engineers and PhDs. IMT employs 4,500 people and has an annual budget of €400 million, 40% of which comes from its own resources. IMT has two Carnot institutes, 35 industrial chairs, produces 2,100 A-rank publications and 60 patents annually, and carries out €110 million worth of contract research.

1.2. IMT Mines Alès

The school's raison d'être: "Thanks to its membership of IMT and its strong regional roots, IMT Mines Alès gives its students the best opportunities to fulfill their professional potential and become responsible players in the development of the nation while preserving the planet's resources." The values that drive us: boldness, commitment, sharing, and excellence.

Founded over 180 years ago, IMT Mines Alès currently has 1,400 students (including 250 international students) and 380 staff members. It has two campuses in Alès and also has locations in Montpellier and Pau. Its students are general engineers, specialist engineers (through apprenticeships), doctoral students, and master's or specialized master's students. It welcomes more than 500 trainees in continuing professional education.

IMT Mines Alès is a prestigious grande école ranked among the best engineering schools nationally and internationally. Founded in 1843, our school is located in Alès, a small town and capital of the Cévennes region, where the quality of life is greatly appreciated by its inhabitants. A town in the Gard department (30), 30 km north of Nîmes, Alès is located at the foot of the Cévennes National Park, of which it is by far the largest town, with 42,452 inhabitants and a metropolitan area of 133,546 inhabitants (29th largest metropolitan area in France, 5th in Occitanie).




The school has three research and teaching centers of high scientific and technological caliber, working in the fields of materials and civil engineering (C2MA), the environment and risks (CREER), and artificial intelligence and industrial and digital engineering (CERIS). These entities bring together around 85 permanent teacher-researchers (half of whom are HDR), 40 research support staff, and 100 doctoral and post-doctoral students, who produce more than 130 A-ranked publications and €3 million in research contracts each year, a third of which are direct contracts with companies. These research staff contribute to six research units, including four joint research units (UMR). IMT Mines Alès is accredited to award doctoral degrees in four doctoral schools.

It has 12 technology platforms and 1,600 partner companies. Creativity is a key feature that permeates all its activities. The school was the first to create an incubator in 1984 (200 companies created to date, 1,000 jobs). The school offers rich and varied career paths: faculty members have opportunities for professional mobility within the various IMT schools and can also, if they wish, take on responsibilities within the school's functional departments (academic affairs, research, international affairs, economic development, etc.) for part of their time.

At IMT Mines Alès, each person is a key player in our Sustainable Development and Social Responsibility (SD&SR) approach. We are committed to promoting environmentally friendly practices, fostering diversity and inclusion, and ensuring ethics in our activities. We encourage all our employees to adopt a responsible approach in their daily actions and to propose innovative ideas that reinforce our positive impact on society and the environment.

1.3 Center for Teaching and Research in Computer Science and Systems (CERIS)

CERIS houses two research units: SyCoIA (Complex Systems and Artificial Intelligence), which aims to master complex systems in the context of change linked to the rise of digital technology, and EuroMov Digital Health in Motion (EuroMov DHM), jointly supervised by IMT Mines Alès - University of Montpellier, which focuses on human sensorimotor performance with applications mainly in health and sports. Two teaching departments are attached to CERIS: 2IA for Computer Science and Artificial Intelligence and PRISM for Industrial Performance and Mechatronic Systems, as well as two technology platforms, AIHM for Alès Imaging and Human Metrology and PFM for Mechatronics Platform.

The Industry of the Future area of excellence is a new way of thinking about and organizing business, relying heavily on key principles, resources, and technologies that have an organizational, methodological, and technological impact. The PRISM department offers students the opportunity to specialize in industrial and mechatronic systems engineering to meet the challenges of digital transition in the service of performance. Among other things, it focuses on strong skills in complex systems engineering.

In the midst of technological change, our organizations (industrial, educational, medical, governmental, administrative, and financial) are increasingly connected and rely on IT tools and solutions that give artificial intelligence an increasingly important role. The 2IA department offers students the opportunity to specialize in software application development to meet the challenges posed by this change. It is available in two options in the initial training program and one option in the apprenticeship program.

1.4 Complex Systems and Artificial Intelligence Research Unit (SyCoIA)

In a context marked by accelerating digital transformation, the emergence of complex cyber-physical systems, and the widespread use of artificial intelligence in decision-making processes, engineers and researchers are facing new scientific challenges: designing resilient, adaptive, explainable, and interoperable systems capable of operating in uncertain environments while respecting human, ethical, and regulatory constraints. This complexity calls for an integrated approach combining modeling, simulation, systems and software engineering, trusted AI, process optimization, and human decision-making.

This is the perspective taken by the SyCoIA unit. Drawing on its multidisciplinary expertise, the SyCoIA research unit has defined a manifesto in the form of a research project: to design and pilot intelligent systems using approaches that integrate artificial intelligence, software engineering, systems engineering, modeling and simulation, for a trusted digital transformation that is human-centered and adapted to dynamic and uncertain environments. It will focus in particular on complex systems capable of learning, adapting, and making decisions in a reliable, explainable, and interoperable




manner in dynamic and constrained environments by proposing theoretical and methodological frameworks to guarantee the performance, robustness, traceability, and trustworthiness of these intelligent systems.

More specifically, the successful candidate will join SyCoIA's CORTEX theme. CORTEX (COntext-aware, RobusT and EXplainable AI – Trustworthy, Adaptive, and Human-centered AI) offers a technical and original perspective on the study of trustworthy AI systems that are both robust and human-centered. The improvements and growing adoption of AI require in-depth reflection and work on the trust that can be placed in AI systems. How can we ensure that the AI models we develop are both robust, i.e., perform well despite significant variations in usage conditions or environmental disturbances, and human-centered, i.e., serve humanity in accordance with an established value system?

2. Context and job description

2.1. Context

As the popularity of so-called "black box" AI systems and their large-scale use increases, so do the costs of bad decisions. This can lead to mistrust among users of these systems. Therefore, it is essential to develop tools to study the robustness and explainability of these systems. Robustness and explainability have become major challenges for the implementation of trustworthy AI. Robustness helps avoid vulnerabilities that can lead to errors or abuse of AI systems, while explainability (xAI) allows users to understand how these systems work. These two issues are even more critical when AI systems are used in sensitive or high-stakes applications.

The presence of sensors continuously collecting data, due to recent advances in data collection technology, requires close attention to time series analysis. In particular, multivariate time series (MTS) are ubiquitous in many fields of science and engineering, including medicine, cybersecurity, financial markets, law enforcement, and more. In this type of data, anomaly detection is a major issue. Anomalies can take many forms. Abnormal observations due to measurement errors, referred to as unwanted "noise," and "novelties" referring to unusual but interesting phenomena. The latter can lead to the detection of failures or changes in behavior. Since anomaly detection is performed online, i.e., dynamically, it requires anomaly detection algorithms with high detection performance and fast execution. Among these tools, deep neural networks (DNNs) are the most effective. It is therefore necessary to study the robustness and explainability of DNN decisions in this MTS context.

We are interested in implementing explainability methods for robust AI algorithms for anomaly detection in MTS. More specifically, the objective of this project is to implement AI systems for MTS prediction that meet several objectives : accuracy, online operation (speed of execution), explainability, and caution.

Two areas of application have already been identified: health and sports. In sports, we are interested in two types of problems: 1) anomalies in the return to play of elite athletes, which involves monitoring a player's health during their rehabilitation period after an injury. In healthcare, we are interested in the effects of post-stroke treatment on patients. More specifically, we are focusing on monitoring the use of the paralyzed arm in patients. In this case, we are interested in anomalies in the use of, for example, the paralyzed arm of patients. The stakes in these two applications are high. In the first case, a relapse by the player could lead to significant financial losses that could bankrupt the club, and in the second case, the loss of function in the paralyzed arm. The applications are not limited to these two examples.




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2.2. Job description

The successful candidate will join a team working on various topics related to robustness and explainability:

Depending on your profile, you will contribute to:

- Work on cautious adaptive AI and the explainability of cautious AI,
- Work on quantifying uncertainty in MTS predictions,
- Causal explainability of cautious predictions,
- Experiments on state-of-the-art benchmarks,
- Preliminary experiments on health data (with Montpellier University Hospital) and/or sports data (potentially with a professional soccer club).

Depending on your profile, some aspects will be explored in greater depth than others, and additional aspects are being considered with regard to the models used. We are open to proposals for contributions from candidates based on their areas of interest.

The project will be carried out in close collaboration with IMT Atlantique (LAB-STICC).

3. Required profile and general evaluation criteria

Your manager and the team in place will support you in developing your skills, while promoting your experience and talents:

Minimum level of education and/or experience required :

Beyond your degree, your personality will make the difference.

- PhD in computer science on a topic related to deep learning.

Technical skills, knowledge, and experience appreciated :

- Deep learning models and their implementation (ability to train and refine pre-trained models on specific datasets using dedicated GPU computing resources), evaluation of trained models according to standard protocols.
- XAI techniques; knowledge of the main XAI methods. Skills can be improved during the assignment, but knowledge of these aspects is desirable.
- Uncertainty quantification: knowledge of probability and statistics. Knowledge of methods for quantifying uncertainty in DNNs and non-additive theories (fuzzy probability, belief functions, etc.) is appreciated.
- Knowledge of time series processing is appreciated.

Required behavioral and interpersonal skills :

- Dynamism
- Autonomy
- Commitment
- Teamwork
- Organizational skills
- Rigorous and methodical
- Initiative
- Adaptability
- Intellectual curiosity
- Creativity and innovation




4. Application

Administrative application requirements

The position offered by IMT Mines Alès is a 15-month, full-time fixed-term contract under public law, governed by the provisions of the Institut Mines-Télécom management framework, profession P, Postdoctoral Researcher, category II.

Salary: Your salary will be reviewed and determined based on your experience and related skills.

Application

Applications (CV and cover letter) should be sent **exclusively to**:
https://institutminestelecom.recruitee.com/o/post-doctorante-apprentissage-profond-de-confiance-sur-des-series-temporelles-cdd-15-mois-imt-mines-ales

Those in charge of recruitment will carefully review your application.

Recruitment schedule

A panel of several people will interview you and ensure that you are in the best possible position to succeed in this meeting.

Application deadline :	**February 20, 2026**
Provisional date for the panel interview :	**March 16, 2026**
Desired start date :	**May 4, 2026**

Contact persons

If you require further information regarding your application, please do not hesitate to contact the following individuals:

Regarding the job description:

Abdelhak IMOUSSATEN, Lecturer-researcher
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Gregory SMITS, Lecturer-researcher
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Regarding administrative matters:

Géraldine BRUNEL, Director of Human Resources
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Onboarding

A smooth integration for a successful start

Upon arrival, you will benefit from an integration period to help you discover your duties and your work environment. You will be welcomed by your HR representative, who will guide you through all the steps necessary for a smooth transition into your new role.