

Senior Research Scientist in AI for Energy Systems and Advanced Materials

Background

For several years, IFPEN has been actively engaged in the field of data science, developing innovative solutions for a wide range of applications: observation and analysis of mobility patterns, dynamic control of energy systems, optimization of technological processes, and the design of advanced materials for batteries and catalysts...

In line with this focus, the Control, Signal, and Systems Department seeks to sustainably strengthen its expertise in scientific artificial intelligence applied to complex physical systems and materials, in order to support the development of strategic projects related to the energy transition.

We are seeking an experienced researcher interested in tackling ambitious scientific challenges at the intersection of artificial intelligence, image processing, and physical modeling.

Main Mission and Activities

Contribute to the development of innovative approaches in artificial intelligence for the analysis, modeling, and design of energy systems and advanced materials, and participate in the development of new research topics at the interface between AI and physical systems.

Activities :

- Develop scientific image processing approaches for the characterization and multiscale analysis of materials
- Leverage multimodal data (images, time series, process data) for modeling and performance prediction
- Develop learning methods that incorporate physical knowledge
- Contribute to data-driven design and optimization work
- Contribute to the structuring and development of artificial intelligence research themes within the department
- Actively participate in IFPEN's strategic projects by contributing expertise in AI and modeling
- Supervise or co-supervise doctoral students and interns
- Contribute to scientific outreach through publications and international collaborations

Technical Skills and Qualifications

Required Skills:

- Solid background in machine learning and deep learning
- Experience in scientific image processing or applied computer vision
- Strong interest in modeling physical systems or materials
- Experience handling complex and heterogeneous data
- Proficiency in scientific tools (Python, ML frameworks, scientific computing tools)

Personal Qualities:

- Scientific curiosity and ability to learn quickly
- Appreciation for interdisciplinary work
- Ability to work in a team and collaborate with domain experts
- Independence and initiative
- Potential to develop skills toward high-level scientific expertise

Degrees, educational background

- Ph.D. in artificial intelligence, data science, image processing, physical systems modeling, or a related field
- Several years of academic or industrial research experience
- Previous experience in mentoring (thesis, postdoctoral research) is preferred

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