

Open position: Post-doc in Data Analysis and Machine Learning at L2S, Paris-Saclay

Within the PEPR DIADEM program, the HIWAY2MAT project aims at accelerating the discovery of new materials by developing an autonomous robotic platform for materials research. In collaboration with the SPMS laboratory, we are looking for a post-doc in data analysis and machine learning to automate experimental materials research.

The mission is focused on data analysis and machine learning to enable autonomous discovery of new materials. Autonomous materials research relies on the idea of closing the loop from material preparation and the characterization of its structural, chemical and functional properties, to the next material design choice by means of an automated decision making process, until requested functional properties are reached. However, automation of production and characterization of materials at higher rates may imply imperfections in the characterization data. The objectives are therefore twofold : first, design a robust data analysis procedure to automatically extract significant features of the material properties; then, propose a decision making algorithm to automatically iterate the experimental procedure until desired functional properties of the materials are reached. Within the scope of this mission we will focus on a benchmark case study.

Required profile:

- PhD degree in Control Theory or related fields: skills in Modelling, Signal Processing, Data Analysis and Machine Learning
- Programming languages: Matlab, Python
- Strong analytical skills
- Taste for experimental research
- Speaking and writing English at the scientific and professional level
- Experience of publishing high quality research papers

Duration: 12 months (up to 15 depending on starting date)

Starting date: as soon as possible

Location: L2S / SPMS, 3 rue Joliot Curie, 91192 Gif-sur-Yvette, France

Deadline for applications: March 31, 2024

To apply: Complete applications are to be transmitted to {Maria.Makarov@centralesupelec.fr; Pedro.Rodriguez@centralesupelec.fr} **with email subject “Postdoc L2S/SPMS – (our surname)”**

Required documents:

4. Detailed curriculum vitae and list of publications
5. Cover Letter
6. Names and contact details of 2 referees

References:

Shimizu, R., Kobayashi, S., Watanabe, Y., Ando, Y., Hitosugi, T. (2020). Autonomous materials synthesis by machine learning and robotics. *APL Materials*, 8(11).

Rahmanian, F., Flowers, J., Guevarra, D., Richter, M., Fichtner, M., Donnely, P., ... & Stein, H. S. (2022). Enabling Modular Autonomous Feedback-Loops in Materials Science through Hierarchical Experimental Laboratory Automation and Orchestration. *Advanced Materials Interfaces*, 9(8), 2101987.