IMT Mines Albi École Mines-Télécom	**Research engineer – Dynamic shop scheduling within a digital twin architecture**	25/03/2025

Localisation	IMT Mines Albi – 81000 ALBI
Direction / Department	Industrial Engineering Center
Minimum academic level	Masters/PhD

Work Environment

The École nationale supérieure des mines d'Albi-Carmaux (IMT Mines Albi) is an establishment of the Institut Mines Télécom, the leading French group in engineering education. Its four missions are education (engineers, doctoral candidates, master's programs, etc.), research (three research centers: RAPSODEE, ICAA, and the Industrial Engineering Center), economic development (platforms, incubators, etc.), and the dissemination of scientific and technical information. It employs 300 staff members and has over 1000 students. Its evolution is currently marked by its integration into the Institut Mines Télécom and the development of its international activities (notably master's programs).

Context

This position, available at IMT Mines Albi, is attached to the Industrial Engineering Center (Centre Génie Industriel in French), which currently employs nearly 70 people. The center is focused on supporting the transition of ecosystems by enabling responsible and sustainable decision-making in unstable or disrupted environments. This is accomplished through representing, modeling, and analyzing data from these organizations to formalize knowledge up to the decision-making stage in heterogeneous, collaborative, uncertain, and/or disrupted contexts. It is structured around applied research axes and scientific programs.

The applied research axes are:

- Axis FLOWS: Flexible Logistics and Operations for sustainable Worlds;
- Axis DiSCS: Digital Systems for Crisis Management and Security;
- Axis TRACE: Territorial Resilience, Agility, and Circular Economy;
- Axis WHOPS: Well-being and Health through Organizational Processes and Services.

The two scientific programs central to these applied research axes are:

- HOPOPOP: Hybridization for Operations & Planning, Organizations & Performance, Optimization & Problem-solving;
- AIMED: Automated Information Modeling and Extraction for Decision-makers.

Missions

The contract will be executed under the framework of the Digital Twin Chair, which brings together three IMT schools (Albi, Alès, Saint-Étienne) and three industrial partners (Inoprod, Pierre Fabre, Siemens). Its aim is to enhance an existing dynamic scheduling tool for a hybrid flow-shop by leveraging the digital twin architecture. The current tool incorporates a discrete optimization solver based on a simple metaheuristic as well as discrete event simulators to evaluate the performance of the scheduling and to emulate a disrupted evolution of the workshop.

The main questions to be addressed during the period are:
– Can we learn from the collected data when it is necessary to trigger rescheduling rather than doing so at regular intervals?
– What modifications can be made to existing models/solvers to benefit from integration into a digital twin?

The selected candidate will therefore be required to:
– Improve the existing tool based on the already available software versions, either on the solver side or the simulator side.
– Submit the research results in scientific publications and present the project outcomes at national and international conferences and events.
– Participate in teaching activities at the CGI if desired.

Expected Profile

Master's degree or Doctorate in Industrial Engineering and/or Optimization.
Skills in discrete event simulation and operations research. Experience with machine learning issues and/or robust optimization is a plus.
Fluency in using programming languages (Python, Java, C++ or C#).
French or English fluency required.

Working Conditions

A fixed-term contract of 12 months, based at the Industrial Engineering Center of IMT Mines Albi. Participation in scientific events (conferences, seminars) and industrial events (steering committees, site visits) is expected.

Application

Interested candidates are invited to submit the following documents:
– Detailed research CV
– Cover letter explaining the suitability for the position

Application deadline: 2 May 2025

Contacts

For any questions or additional information, please contact: jacques.lamothe@mines-albi.fr

For application, please connect to:

https://www.imt-mines-albi.fr/en/jobs-at-imt-mines-albi

And applicate on the job entitled:

Ingénieur ou Ingénieure de recherche : planification dynamique des ateliers dans une architecture