Research Software Engineer in computational mechanics & scientific machine learning

Location: Ecole Nationale des Ponts et Chaussées, Champs-sur-Marne, France
Contract: 4 years full-time position, funded by ERC grant AUTOMATIX - 101229452.
Start date: As soon as possible
Application: Please submit a detailed CV, at least 2 recommendation letters or contact information of people who can recommend you, a short statement of interest and links to relevant software projects by email to Jeremy Bleyer, jeremy.bleyer@enpc.fr – Deadline: **March 31st 2026**

Position summary

Within the scope of the ERC Consolidator project AUTOMATIX (see details below), we are seeking a **Research Software Engineer** (RSE) to support the development of advanced open-source tools at the interface of computational mechanics, finite element modeling, and scientific machine learning. The RSE will contribute to the design, implementation, and maintenance of open-source software libraries that integrate phenomenological and ML-based constitutive modeling, finite element technology, and microstructural simulation tools.

This position is ideal for candidates who enjoy working in a research environment, building high-quality and sustainable scientific software, and collaborating closely with a team of PhD students and postdoctoral researchers.

Key responsibilities

Software development & maintenance

The RSE will contribute to the overall software ecosystem of the project, including:

- developing, extending, and maintaining the project's constitutive modeling library based on JAX.
- supporting the integration of material models within the FEniCSx finite-element library and contributing to new tools for data generation, model calibration, and full-field identification;
- ensuring software quality through continuous integration, testing, documentation, and version control workflows;
- coordinating contributions from the research team to ensure smooth, coherent, and efficient integration of new developments.

Team support and collaboration

The RSE will assist the researchers (PhD students and postdoctoral fellows) involved in the AUTOMATIX project in using and extending the software stack. He/she will provide guidance on coding practices, testing, and workflow design. He/she will participate in technical discussions, project meetings, and scientific publications.

Qualifications

The RSE should hold a PhD, ideally in computational mechanics, or applied mathematics/computer science. The candidate should demonstrate:

- strong experience in programming and scientific computing (Python, Julia, C++, etc.);
- experience in developing scientific/engineering software and good knowledge of open-source development practices;
- solid understanding in at least one of the following areas: numerical methods, computational modeling, machine learning or continuum mechanics;
- ability to work collaboratively in a research team, provide guidance and training to non-specialist developers, and communicate scientific results clearly.

Previous experience with HPC FE software like FEniCSx and/or machine-learning frameworks (JAX, Pytorch, etc.) is a plus but not required.

What we offer

This full-time position is fully funded for at least 4 years within the ERC project, in which the RSE will play a central role. The RSE will have the opportunity to shape the development of a state-of-the-art, publicly released software ecosystem and collaborate with experts in computational mechanics and machine learning.

The AUTOMATIX project

Principal Investigator: Jeremy Bleyer[1], Ecole Nationale des Ponts et Chaussées, IP Paris
Funding period: 2026-2031

The AUTOMATIX project aims to improve the modeling of material behavior in solid mechanics. Accurately capturing complex phenomena (such as plasticity, damage, or environmental effects) remains a major challenge in many applications. AUTOMATIX leverages advances in *machine learning* to automatically build models from experimental data while directly embedding physical and mathematical knowledge within the learning architecture. This hybrid approach produces more reliable models, consistent with mechanical laws and less dependent on large datasets.

A key outcome will be an open-source, modular, and high-performance library accessible to both academia and industry. AUTOMATIX will be applied in particular to the modeling of 3D-printed concrete at the Navier laboratory, to better predict complex phenomena such as material curing and crack formation.

[1] https://bleyerj.github.io/