Full Stack Developer - Research & Innovation

Institution: CentraleSupélec – Université Paris-Saclay
Collaboration: IHU PRISM, Gustave Roussy & CentraleSupélec
Location: Gif-sur-Yvette (CentraleSupélec) with close collaboration at Villejuif (Gustave Roussy), France
Contract type: Fixed-term contract (CDD) – 12 to 18 months, renewable up to 5 years
Start date: Immediate
Salary: According to experience and institutional grid

Context

CentraleSupélec (Université Paris-Saclay, ranked 13th in the 2025 Shanghai Ranking) is one of France's leading engineering schools in artificial intelligence, systems, and technology. Gustave Roussy, Europe's largest cancer center, is internationally recognized for its excellence in oncology, precision medicine, and early-phase clinical research. Together, with INSERM and Unicancer, they co-founded the IHU PRISM, France's National Centre for Precision Medicine in Oncology, dedicated to data-driven personalization of cancer treatment.

As part of this initiative, the ARCANE project is a flagship program aiming to create the first AI-based decision-support system for rare cancers. By combining multi-agent systems, multimodal AI, and large language models (LLMs), ARCANE is building a virtual tumor board platform to assist clinicians in developing personalized therapeutic strategies.

We are looking for a talented **Full Stack Developer – Research & Innovation** to join our teams. The mission is to design and deploy the software backbone of ARCANE, transforming cutting-edge AI prototypes into a secure, robust, and user-friendly platform for clinical use.

Our platform combines multimodal biomedical data (text, imaging, clinical records) with advanced AI agents, enabling real-world decision support in oncology. The developer will work at the intersection of computer science and clinical practice, collaborating closely with researchers at CentraleSupélec and clinicians at Gustave Roussy.

Missions

The recruited engineer will have a strategic position at the intersection of research and clinical practice. Main responsibilities include:

- **Design and implementation** of the ARCANE web platform using **Flask (backend), React (frontend), and PostgreSQL (database)**.
- **Setup of the agentic framework**, enabling AI agents (LLMs, reinforcement learning modules) to interact and collaborate within the system.
- **Integration of AI prototypes** developed by researchers at CentraleSupélec into a secure and user-friendly platform for clinical use at Gustave Roussy.
- **Development of APIs** to connect multimodal data sources (text, imaging, clinical records) with decision-support modules.
- **Collaboration with clinicians** to co-design interfaces and ensure usability and relevance in real-world oncology workflows.
- **Deployment and maintenance** of the platform in secure environments (on-premise servers, cloud, or HPC clusters).

- **Documentation, testing, and support** for research experiments and clinical validation.

Required Profile

- Master's degree or engineering diploma in **Computer Science, Software Engineering, or related fields**.
- Proven experience in **full stack development**, including:
    - Backend: **Python (Flask)**
    - Frontend: **React**
    - Database: **PostgreSQL**
- Good knowledge of **software engineering practices** (Git, Docker, CI/CD).
- Familiarity with **machine learning frameworks** (PyTorch, Hugging Face) and willingness to integrate research prototypes.
- Strong problem-solving skills and the ability to **collaborate with interdisciplinary teams**.
- Excellent communication skills in English.

Assets (valued but not mandatory)

- Experience with **multi-agent systems, reinforcement learning, or LangChain**.
- Background in **medical or biomedical applications**.
- Knowledge of **security frameworks** (OAuth2, JWT, role-based access).
- Familiarity with **cloud platforms** (AWS, GCP, Azure) or **HPC clusters**.
- Prior experience in **collaborative research projects** (ANR, EU, or industry).

What we offer

- A **unique opportunity** to contribute to a **flagship program** at the intersection of **AI and oncology**.
- A stimulating environment at **CentraleSupélec, Université Paris-Saclay**, with close ties to **Gustave Roussy**, Europe's #1 cancer center.
- The chance to **design and deploy the first AI-based decision-support system for rare cancers**.
- Collaboration with an interdisciplinary team of **AI researchers, clinicians, and biomedical experts**.
- Opportunities for professional growth, training, and participation in **high-impact scientific publications**.

Contact

Interested candidates are invited to send their application (CV, cover letter, and links to GitHub/projects) to: **hakim.benkirane@centralesupelec.fr.** Please indicate "Application – Full Stack Developer ARCANE" in the subject line.