Offre n°2025-09619

Engineer F/H: Generative AI agentic architectures for educational technologies

Le descriptif de l'offre ci-dessous est en Anglais

Type de contrat : CDD

Niveau de diplôme exigé : Bac + 5 ou équivalent

Fonction : Ingénieur scientifique contractuel

Niveau d'expérience souhaité : Jeune diplômé

Contexte et atouts du poste

The Flowers AI & CogSci Lab at Inria, in partnership with EvidenceB, Café pédagogique, and ClassCode, is launching GAIMHE (Generative AI for Hybrid Mathematics Education), a large-scale research and innovation project funded by Bpifrance. This initiative addresses a critical challenge in educational technology: developing AI systems that combine the pedagogical rigor and personalization capabilities of Intelligent Tutoring Systems (ITS) with the flexibility and generative power of modern large language models.

Current ITS platforms, such as EvidenceB's AdaptivMaths, leverage cognitive science principles and structured pedagogical graphs to deliver personalized learning pathways to students. These systems have demonstrated effectiveness across tens of thousands of classrooms in France (primary, middle, and high schools, across multiple disciplines including AdaptivMaths and MIA Seconde). However, their development requires substantial manual content creation. Conversely, generative AI offers unprecedented flexibility but often lacks pedagogical grounding, cannot sustain long-term curriculum personalization, and raises concerns about energy efficiency and pedagogical biases.

GAIMHE will develop hybrid architectures that harness generative AI for automated content generation while maintaining pedagogical constraints, deploy targeted generative guidance aligned with established learning theories, and create compact student models for next-generation personalization algorithms. The project will leverage EvidenceB's extensive deployment infrastructure to work with authentic large-scale educational data and validate innovations in real classroom settings. In alignment with open science principles and through partnership with Région Île-de-France, major project outputs (datasets, models, software) will be released as digital commons under open-source licenses.

Mission confiée

- Design, implement, and evaluate generative AI systems for automated creation of pedagogically compliant educational exercises and content
- Develop and optimize agentic architectures integrating large language models with structured ITS frameworks, ensuring pedagogical alignment and computational efficiency
- Implement and fine-tune small-scale generative models for student learning trajectory prediction and personalized curriculum adaptation
- Deploy LLM-as-judge frameworks and reinforcement learning approaches to evaluate and improve pedagogical quality of AI-generated content
- Conduct large-scale experiments analyzing learning traces and student interactions with hybrid AI systems in authentic classroom environments
- Collaborate with pedagogical experts, cognitive scientists, and industrial partners to translate educational requirements into technical specifications
- Contribute to open-source software development and documentation for digital commons dissemination
- Participate in scientific valorization through publications, presentations, and technical reports

Compétences

Required Profile and Expertise

Essential qualifications:

- Advanced degree (Master's or PhD) in Computer Science, AI, Machine Learning, or related field
- Demonstrated expertise in large-scale generative AI systems (inference and training pipelines)
- Strong experience with modern deep learning frameworks (PyTorch, TensorFlow, Hugging Face ecosystem)
- Proficiency in training and optimizing small-to-medium scale language models
- Experience with agentic architectures, LLM orchestration, and prompt engineering
- Knowledge of LLM-as-judge methodologies and/or reinforcement learning for LLMs
- Strong programming skills (Python required, other languages valued)
- Sufficient mastery of French language for collaboration with French educational partners and documentation
- Ability to work collaboratively in interdisciplinary research teams

Valued qualifications:

- Experience with learning analytics, educational data mining, or education research
- Knowledge of cognitive science, learning theories, or pedagogical design principles
- Familiarity with ITS architectures or adaptive learning systems
- Experience deploying ML systems in production environments

- Contributions to open-source projects
- Publications in relevant AI, ML, or educational technology venues

Position details: Location: Inria Bordeaux - Sud-Ouest, Talence, France Contract type: Fixed-term research engineer position Starting date: As soon as possible

To apply: Send CV, cover letter, and relevant portfolio/GitHub links to pierre-yves.oudeyer@inria.fr with **[application]** in the subject line.

Avantages

- Subsidized meals
- Partial reimbursement of public transport costs
- Possibility of teleworking and flexible organization of working hours
- Professional equipment available (videoconferencing, loan of computer equipment, etc.)
- Social, cultural and sports events and activities
- Access to vocational training
- Social security coverage

Rémunération

According to professional experience

Informations générales

- **Thème/Domaine :** Robotique et environnements intelligents
- **Ville :** Talence
- **Centre Inria :** Centre Inria de l'université de Bordeaux
- **Date de prise de fonction souhaitée :** 2026-02-01
- **Durée de contrat :** 3 ans
- **Date limite pour postuler :** 2026-06-30

Contacts

- **Équipe Inria :** FLOWERS
- **Recruteur :**
  Oudeyer Pierre-yves / Pierre-Yves.Oudeyer@inria.fr

A propos d'Inria

Inria est l’institut national de recherche dédié aux sciences et technologies du numérique. Il emploie 2600 personnes. Ses 215 équipes-projets agiles, en général communes avec des partenaires académiques, impliquent plus de 3900 scientifiques pour relever les défis du numérique, souvent à l’interface d’autres disciplines. L’institut fait appel à de nombreux talents dans plus d’une quarantaine de métiers différents. 900 personnels d’appui à la recherche et à l’innovation contribuent à faire émerger et grandir des projets scientifiques ou entrepreneuriaux qui impactent le monde. Inria travaille avec de nombreuses entreprises et a accompagné la création de plus de 200 start-up. L'institut s'e?orce ainsi de répondre aux enjeux de la transformation numérique de la science, de la société et de l'économie.

Attention: Les candidatures doivent être déposées en ligne sur le site Inria. Le traitement des candidatures adressées par d'autres canaux n'est pas garanti.

Consignes pour postuler

Sécurité défense :
Ce poste est susceptible d’être affecté dans une zone à régime restrictif (ZRR), telle que définie dans le décret n°2011-1425 relatif à la protection du potentiel scientifique et technique de la nation (PPST). L’autorisation d’accès à une zone est délivrée par le chef d’établissement, après avis ministériel favorable, tel que défini dans l’arrêté du 03 juillet 2012, relatif à la PPST. Un avis ministériel défavorable pour un poste affecté dans une ZRR aurait pour conséquence l’annulation du recrutement.

Politique de recrutement :
Dans le cadre de sa politique diversité, tous les postes Inria sont accessibles aux personnes en situation de handicap.