Offer #2025-08870

Doctorant F/H How curiosity enhances learning across childhood and adolescence: Models and experimentation of the role of metacognition and agency

The offer description below is in French

Contract type : Fixed-term contract

Level of qualifications required : Graduate degree or equivalent

Fonction : PhD Position

About the research centre or Inria department

The Inria center at the University of Bordeaux is one of the nine Inria centers in France and has about twenty research teams.. The Inria centre is a major and recognized player in the field of digital sciences. It is at the heart of a rich R&D and innovation ecosystem: highly innovative SMEs, large industrial groups, competitiveness clusters, research and higher education players, laboratories of excellence, technological research institute...

Context

This PhD position happens in the context of the European project DevCur, which summary is as follows.

In a constantly changing world full of uncertainties, one way to adapt to unforeseen circumstances is by harnessing lifelong learning driven by curiosity - the desire to acquire information about the world. Initial research suggests that curiosity not only

enhances learning but also metacognitive awareness of one’s own learning progress strengthens curiosity. However, the reciprocal influences between curiosity-based learning and metacognition, particularly during late childhood and adolescence when both abilities continue to develop, remain poorly understood. To address this gap in the existing literature, our interdisciplinary approach aims to explore the bidirectional connections between curiosity-based learning and metacognition during this crucial developmental period. Additionally, late childhood and adolescence is marked by increasing needs of agency, which can boost the curiosity effects on learning because the learner is in control of the learning material. We will therefore seek to study how the protracted development of metacognition enhances the efficiency of curiosity-based learning, especially in situations of high agency. To this end, we will conduct a series of five experiments, leveraging complementary skills and approaches of world-leading research teams around curiosity and development. We will combine different methodological approaches, including behavioral experiments and functional neuroimaging, training studies, and longitudinal assessments to investigate how across-person differences and within-person changes in metacognition and agency contribute to curiosity-based learning across late childhood and adolescence. We will leverage established and recently developed experimental and naturalistic paradigms from our labs to understand how metacognition affects curiosity-based learning across development. Furthermore, we will translate the lab-based findings from the proposed experiments to design pedagogical interventions that stimulate curiosity and metacognition in the classroom. This is a timely and innovative project as recent research provides all the building blocks needed for a step change in our understanding of the mechanisms of curiosity development. The complementary perspectives of the three pioneering teams (Cardiff, Bordeaux, Trier) provide a unique collaborative opportunity to combine parallel research domains to generate important discoveries on the development of curiosity- based learning with broad scientific and societal impact.

Assignment

The PhD candidate will formalize theories of the interaction between curiosity, metacognition and agency and how they develop. Then, these theories will lead to the design of several experimental paradigms aiming at testing their predictions, either by adaptation and extension of existing protocols (REF), or through the design of novel protocols.
The data collected in these experiments will be studies in the perspective of comptuational models, and potentially lead to updates of the theory and new experimentation.

The PhD candidate will strongly interact with other labs from the consortium (Univ. Cardiff, Univ. Trier) and participate to the associated collaborations (e.g. through co-design and analysis of data in experiments made in these labs).

Main activities

- formalization of psychological and developmental theories of the interaction of curiosity, metacognition and agency
- Design and running of human experimental paradigma
- Analysis of data and computationam modeling
- Scientific paper writing and presentation
- Writing wide audience articles (e.g. blog post)
- Collaboration with international partners

Skills

Computational modeling for cognitive sciences

General skills in AI

Knowledge of psychological theories of curiosity

Benefits package

- Subsidized meal
- partial reimbursement of public transport costs
- possibility of partial teleworking and flexible organization of working hours
- professional equipment vilable (videoconferencing, loan of computer equipment...)
- social, cultural and sports events ans activities
- access to vocational training
- social security coverage

Remuneration

The gross monthly salary will be 2200€ and from 2026 will be 2300€ (before social security contributions and monthly witholding tax)

General Information

- **Theme/Domain :** Robotics and Smart environments
- **Town/city :** Talence
- **Inria Center :** Centre Inria de l'université de Bordeaux
- **Starting date :** 2025-09-01
- **Duration of contract :** 3 years

- **Deadline to apply :** 2025-05-31

Contacts

- **Inria Team :** FLOWERS
- **PhD Supervisor :**
  Oudeyer Pierre-yves / Pierre-Yves.Oudeyer@inria.fr

About Inria

Inria is the French national research institute dedicated to digital science and technology. It employs 2,600 people. Its 200 agile project teams, generally run jointly with academic partners, include more than 3,500 scientists and engineers working to meet the challenges of digital technology, often at the interface with other disciplines. The Institute also employs numerous talents in over forty different professions. 900 research support staff contribute to the preparation and development of scientific and entrepreneurial projects that have a worldwide impact.

Warning : you must enter your e-mail address in order to save your application to Inria. Applications must be submitted online on the Inria website. Processing of applications sent from other channels is not guaranteed.

Instruction to apply

If you are interested by this job, please could you apply on website jobs.inria with the following documents :

- cv
- cover letter

Defence Security :
This position is likely to be situated in a restricted area (ZRR), as defined in Decree No. 2011-1425 relating to the protection of national scientific and technical potential (PPST).Authorisation to enter an area is granted by the director of the unit, following a favourable Ministerial decision, as defined in the decree of 3 July 2012 relating to the PPST. An unfavourable Ministerial decision in respect of a position situated in a ZRR would result in the cancellation of the appointment.

Recruitment Policy :
As part of its diversity policy, all Inria positions are accessible to people with disabilities.