



Offer #2025-09061

PhD Position F/M Limits for the global video consumption

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 Centre at Rennes University is one of Inria's eight centres and has more than thirty 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 PMEs, large industrial groups, competitiveness clusters, research and higher education players, laboratories of excellence, technological research institute, etc.

Context

Type: PhD thesis

Place: Inria Center of University of Rennes in the team-project COMPACT

Duration: 36 months

Collaboration during the project:

- Collaboration with Anne-Cécile Orgerie (Magelan team at IRISA)
- Collaboration with the GIS Marsouin (Human and Social Sciences)

Assignment

Context: Working towards a responsible and resilient digital future naturally means questioning a priori the relevance of any rising technology. But what about existing technologies? Trying to make them less energy-intensive proves insufficient, because of the rebound effect this implies. So we need to define limits for their use.

Goal of the project: In this project, we will explore the conditions for setting such limits, particularly in the case of video streams (which account for a significant proportion of CO2 emissions from the digital world). More specifically, we will study the levers (technical, regulatory, legislative, etc.) that can be put in place, as

well as their effectiveness and acceptance by citizens.
This inter-disciplinary question will be addressed in close collaboration with researchers in the Human and Social Sciences.

Bibliography:

- T. Maugey, Towards digital sobriety: why improving the energy efficiency of video streaming is not enough, IEEE MMSP, Poitiers, France, Sept. 2023.
- Demarty, Claire-Hélène, Laurent Blondé, and Olivier Le Meur. "Display power modeling for energy consumption control." 2023 IEEE International Conference on Image Processing (ICIP). IEEE, 2023.
- H. Ferreboeuf, F. Berthoud, P. Bihouix, P. Fabre, D. Kaplan, L. Lefèvre et al., "Lean ICT-towards digital sobriety," Report for the Think Tank The Shift Project, vol. 6, 2019.
- M. Efoui-Hess, "Climate crisis: The unsustainable use of online video," The Shift Project: Paris, France, 2019.
- G. Guennebaud, A. Bugeau, and A. Dudouit, "Assessing VoD pressure on network power consumption," arXiv preprint arXiv:2304.03151, 2023.

Main activities

Detailed tasks:

- model the energy spent over the whole video processing chain during different delivery scenarios.
- identify the high-energetic parts in this pipeline and some related levers that could be put in place to reduce their costs
- discuss with the Human and Social Sciences researchers for setting the foundations of experimentations and inter-disciplinary research directions

Skills

Technical skills and level required : expertise in signal and image processing, strong knowledge in image and video compression

Languages : english and french

Relational skills : integration in a research team

Benefits package

- Subsidized meals
- Partial reimbursement of public transport costs
- Possibility of teleworking (90 days per year) and flexible organization of working hours
- Partial payment of insurance costs

Remuneration

Monthly gross salary from 2200 euros

General Information

- **Theme/Domain** : Vision, perception and multimedia interpretation
IT Technical and production engineering (BAP E)
- **Town/city** : Rennes
- **Inria Center** : [Centre Inria de l'Université de Rennes](#)
- **Starting date** : 2025-09-01
- **Duration of contract** : 3 years
- **Deadline to apply** : 2025-08-25

Contacts

- **Inria Team** : [COMPACT](#)
- **PhD Supervisor** :
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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.

The keys to success

Taste for research tasks and pluri-disciplinary fields

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

Please submit online : your resume, cover letter and letters of recommendation eventually

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.