Offre n°2025-09119

PhD Position F/M Anatomy of smartphone software obsolescence

Type de contrat : Fixed-term contract

Niveau de diplôme exigé : Graduate degree or equivalent

Fonction : PhD Position

Niveau d'expérience souhaité : Recently graduated

A propos du centre ou de la direction fonctionnelle

The Inria Lille - Nord Europe research centre, created in 2008, has a staff of 360, including 305 scientists in 15 research teams. Recognised for its strong involvement in the socio-economic development of the Hauts-De-France region, the Inria Lille - Nord Europe research centre pursues a close relationship with large companies and SMEs. By promoting synergies between researchers and industrialists, Inria participates in the transfer of skills and expertise in digital technologies and provides access to the best European and international research for the benefit of innovation and companies, particularly in the region.

For more than 10 years, the Inria Lille - Nord Europe centre has been located at the heart of Lille's university and scientific ecosystem, as well as at the heart of Frenchtech, with a technology showroom based on Avenue de Bretagne in Lille, on the EuraTechnologies site of economic excellence dedicated to information and communication technologies (ICT).

Contexte et atouts du poste

The proposed PhD is part of the ANR ObsoMobile project “Deconceiving smartphone obsolescence”, in collaboration with the LIRIS (Lyon) and ACCRA (Strasbourg) laboratories.

The aim of this thesis is to investigate the software factors leading to the renewal of mobile terminals, more specifically iOS and Android smartphones. It will be broken down into a quantitative phase involving the collection and analysis of data documenting the operation of mobile applications on more or less recent phones, a qualitative phase involving interviews with mobile development players, and a retrospective phase involving a synthesis of the knowledge acquired through this study.

Regular travel will be required: to Strasbourg and Lyon to meet our partners, and

to national and international symposia and conferences to exchange ideas with the scientific community.
Travel expenses will be reimbursed in accordance with current rates.

Mission confiée

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The aim of this thesis is to investigate the software factors leading to the renewal of mobile terminals, more specifically iOS and Android smartphones. It will be broken down into a quantitative component of data collection and analysis documenting the operation of mobile applications on more or less recent phones, a qualitative component of interviews with players in mobile development, and a retrospective phase synthesizing the knowledge gained from this study.

State of the art :

- [1] É. Lees Perasso, C. Vateau, et F. Domon, « Evaluation environnementale des équipements et infrastructures numériques en France », mars 2023. Consulté le: 14 mars 2024. [En ligne]. Disponible sur: https://www.arcep.fr/la-regulation/grands-dossiers-thematiques-transverses/lempreinte-environnementale-du-numerique/etude-ademe-arcep-empreinte-environnemental-numerique-2020-2030-2050.html
- [2] ARCEP, « Renouvellement Des Terminaux Mobiles et Pratiques Commer-
- ciales de Distribution », juin 2021. Consulté le: 12 mars 2024. [En ligne].
- Disponible sur:
https://www.economie.gouv.fr/files/files/2021/20210709_Rapport_
- Renouvellement_terminaux_mobiles_pratiques_commerciales.pdf
- [3] L. Magnier et R. Mugge, « Replaced Too Soon? An Exploration of Western European Consumers' Replacement of Electronic Products », Elservier Resources, Conservation and Recycling, 2022, doi: 10.1016/j.resconrec.2022.106448.
- [4] L. Mosesso, N. Maudet, E. Nano, T. Thibault, et A. Tabard, « Obsolescence Paths: living with aging devices », in IEEE International Conference on ICT for Sustainability (ICT4S), juin 2023. doi: 10.1109/ICT4S58814.2023.00011.
- [5] L. Wei, Y. Liu, et S.-C. Cheung, « Taming Android fragmentation: characterizing and detecting compatibility issues for Android apps », in IEEE/ACM International Conference on Automated Software Engineering (ASE), 2016. doi: 10.1145/2970276.2970312.
- [6] P. Laperdrix, W. Rudametkin, et B. Baudry, « Beauty and the Beast: Diverting Modern Web Browsers to Build Unique Browser Fingerprints », in IEEE Symposium on Security and Privacy (S&P), 2016. doi: 10.1109/SP.2016.57.
- [7] M. Gómez, Towards Improving the Quality of Mobile Apps by Leveraging Crowdsourced Feedback. University of Lille / Inria, France, 2016.
- [8] S. Habchi, Understanding Mobile-Specific Code Smells. University of Lille / Inria, France, 2019.
- [9] M. Colmant, Multi-Dimensional Analysis of Software Power Consumptions in Multi- Core Architectures. University of Lille / Ademe, France, 2016.
- [10] A. Rule, A. Tabard, et J. D. Hollan, « Exploration and Explanation in Computational Notebooks », in ACM Conference on Human Factors in Computing Systems (CHI), 2018. doi: 10.1145/3173574.3173606.

Principales activités

Main activities:

- Analysis of the state of the art in computer science, design and social sciences concerning mobile obsolescence.
- Acquisition of data on mobile application support on various platforms and versions
- Static and dynamic analysis of mobile applications to assess malfunctions
- Conducted interviews with mobile development teams
- Synthesis of results, writing of thesis manuscript

Additional activities:

- Produce synthesized results of work
- Communicate orally and in writing about your work in various contexts (informal seminars, scientific journals and conferences, etc.).
- Propose tasks to achieve the above-mentioned objectives

Compétences

- Master degree in Informatics, preferably with a Software Engineering specialty
- Knowledge in mobile software development and ecosystem: primarily Android, iOS appreciated
- Interest for Science & Technology Studies (STS) research, sociology, psychology, and obviously Software Engineering research
- Eagerness to conduct and analyse directed interviews with a diverse public, including but not limited to mobile software developers and smartphone users of different backgrounds
- Capacity to synthesize academic literature
- Communication skills, written and oral, in French & English
- Autonomy, initiative

Avantages

- Subsidized meals
- Partial reimbursement of public transport costs
- Leave: 7 weeks of annual leave + 10 extra days off due to RTT (statutory reduction in working hours) + possibility of exceptional leave (sick children, moving home, etc.)
- 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

2 200 € monthly gross salary

Informations générales

- **Thème/Domaine :** Distributed programming and Software engineering Software engineering (BAP E)
- **Ville :** Villeneuve d'Ascq
- **Centre Inria :** Centre Inria de l'Université de Lille
- **Date de prise de fonction souhaitée :** 2025-10-01
- **Durée de contrat :** 3 years
- **Date limite pour postuler :** 2025-08-22

Contacts

- **Équipe Inria :** SPIRALS
- **Directeur de thèse :**
  Luxey Adrien / adrien.luxey@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

Please send your CV and cover letter

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.