The MiMove team at Inria Paris (https://mimove.inria.fr) undertakes research enabling next-generation mobile distributed systems, from their conception and design to their runtime support, with focus on both middleware and data.

MiMove's research, in particular, accounts for the presence of large and volatile populations of mobile and resource-constrained devices, such as user handsets and wireless sensors, as well as of fast evolving and changing infrastructures. We study systems that are dynamically composed from heterogeneous networked resources in the near ( pervasive, edge, fog) and remote (Internet, cloud) environment, and that furthermore adapt to their highly changing execution context, whether technical, physical or social. The latter two aspects are particularly manifested through the physical but also social sensing and actuation capabilities of mobile devices and their users. More specifically, leveraging the massive adoption of smartphones and other user-controlled mobile devices, besides physical sensing – where a device's sensor passively reports the sensed phenomena – social sensing and social crowd-sensing come into play, where the user is aware of and indeed aids in the sensing of the environment.

The candidate should have a PhD in Computer Science with expertise – including experience in the development of related software prototypes – in one and possibly several of the following topics:

- Mobile distributed systems.
- Middleware architectures and protocols.
- Software engineering.
- Wireless sensor networks.
- Social networks.
- Cloud computing.

**Compétences**

In response to the research questions identified above, the postdoc researcher is expected to contribute to MiMove's research in one of the following topics:

- **Emergent mobile distributed systems.** We study techniques enabling emergence of mobile distributed systems in a beforehand unknown, ever-changing environment, while assuring that their required properties are met. These are systems that, due to their automated, dynamic, environment-dependent composition and execution, emerge in a possibly non-anticipated way and manifest emergent properties, i.e., both systems and their properties take their complete form only at runtime and may evolve afterwards.

- **Large-scale mobile sensing and actuation.** MiMove investigates algorithms and protocols for efficient coordination of future mobile sensing and actuation systems, with a special focus on the quality of sensing. We deal with challenges arising from the extremely large scale, dynamism and resource constraints of mobile devices, a great number of which will be attached to people, manifesting uncontrolled mobility behavior.

- **Mobile social crowd-sensing.** MiMove investigates the capabilities and challenges resulting from social sensing, which, by directly involving the users, enables sensing phenomena beyond the typical physical sensing (e.g., subjective crowdsensing causing discomfort or joyfulness, as in a bus or in a concert) and can lead to a feeling of being more socially involved for the citizens. We study solutions to the combination of physically and socially sensed data, incentives for user participation and assurance of user data privacy, as well as novel mobile apps enabling empirical studies of the complex social behaviors involved.

- **Data stream processing.** MiMove investigates algorithms for dynamic scheduling of IoT data stream processing and analytics applications over mobile-edge-cloud resource networks. We study resource models that take into account the hierarchical characteristic and geographical distribution of the mobile-edge-cloud architecture. Based on such models, we calculate operator replication and placement schemes that satisfy multi-objective optimization trade-offs including real-time application response constraints.

**Avantages**

- **Subsidized meals.**
- **Partial reimbursement of public transport costs.**
- **Leave:** 4 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 (after 6 months of employment) 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.**

**Informations générales**

- **Thème/Domaine:** Systèmes distribués et intergiciels
- **Ville:** Paris
- **Centre Inria:** CRI de Paris
- **Date de prise de fonction souhaitée:** 2021-11-01
- **Durée de contrat:** 1 an, 4 mois
- **Date limite pour postuler:** 2021-05-24

**Contacts**

- **Equipe Inria:** MIMOVE
- **Recruteur:** Georgantas Nikolaos / Nikolaos.Georgantas@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 200 équipes-projets agiles, en général communes avec des partenaires académiques, impliquent plus de 3500 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 180 start-up. L’Institut s’efforce ainsi de répondre aux enjeux de la transformation numérique de la science, de la société et de l’économie.

**Consignes pour postuler**

**Candidate’s application file:**

- Cover letter highlighting the adequacy of the candidate’s background with the proposed research.
- CV.
- List of publications.
- Thesis reports if the thesis has already been defended.
- For candidates who have not yet defended, an attestation from the thesis director reporting on the progress of the thesis or the composition of the jury and the probable date of defense.
- Recommendation letters.

**Sécurité défense:**

Ce poste est susceptible d’être affecté dans une zone à régime restrictif (ZRR), telle que définie dans le décret n°2011-425 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.

**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.