

Postdoctoral fellowship (18 months)

Web-Of-Browsers: Towards a fully decentralized web

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The ASAP team is recruiting a post-doctoral researcher for a duration of 18 months, with an immediate starting date.

1 Context: Decentralized Programmability of Browser-Based Systems

The project Web-of-Browsers aims at exploring the construction of a decentralized and browser-based web. This objective stems from the observation that browsers have become the most widely deployed execution environments in the world. Initially only designed to display HTML pages, they have evolved into comprehensive runtime platforms able to execute complex local code, interact with humans, and with remote web services. The recent introduction of WebRTC has further extended the capability of browsers by introducing support for browser-to-browser communication. This turns browsers into a decentralized execution environment where interactions between human and web services are enabled without third party.

2 Research Objectives

The objective of this post-doctoral project is to explore the programmability of browsers as the building block of a decentralized web. We would in particular like to develop a framework for emergent localities on the basis of our existing work [1, 2, 3, 4], i.e. allow practitioners to easily construct advanced decentralized services by assembling simpler and composable distributed bricks. The postdoc offers scope for both algorithmic and experimental developmental work, notably in the domains of information discovery, routing, and coordination.

The project holds potential for strong synergies with related on-going projects running in the ASAP group, notably on private decentralized aggregation, privacy-preserving decentralized learning, and browser-fingerprinting anonymisation.

3 Candidate Profile and Eligibility

The recruited post-doctoral researcher should hold a PhD in Computer Science, with ideally a focus on large distributed computer systems and web technologies. The candidate should be a driven and creative individual, with an interest in innovative and paradigm changing technologies.

Due to funding conditions, the offer is limited to candidates who have spent at least 12 months outside of France over the last 3 years.

4 Application

Applicants should apply, in the first instance, by **submitting on-line** a CV (up to two A4 pages), a short statement outlining their research interests and motivation (up to half an A4 page), and the names and addresses of at least two academic referees.

Application URL: <https://jobs.inria.fr/public/classic/en/offres/2018-00713>

A rolling deadline applies.

References

- [1] Raziel Carvajal-Gomez, Davide Frey, Matthieu Simonin, and Anne-Marie Kermarrec. Webgc gossiping on browsers without a server [live demo/poster]. In *Web Information Systems Engineering - WISE 2015 - 16th International Conference, Miami, FL, USA, November 1-3, 2015, Proceedings, Part II*, pages 332–336, 2015.
- [2] Davide Frey, Mathieu Goessens, and Anne-Marie Kermarrec. Behave: Behavioral cache for web content. In *Distributed Applications and Interoperable Systems - 14th IFIP WG 6.1 International Conference, DAIS 2014, Held as Part of the 9th International Federated Conference on Distributed Computing Techniques, DisCoTec 2014, Berlin, Germany, June 3-5, 2014, Proceedings*, pages 89–103, 2014.
- [3] Davide Frey, Anne-Marie Kermarrec, Christopher Maddock, Andreas Mauthe, Pierre-Louis Roman, and Francois Taiani. Similitude: Decentralised adaptation in large-scale p2p recommenders. In *15th IFIP Int. Conf. on Dist. App. and Interoperable Sys. (DAIS)*, Grenoble, France, 2015.
- [4] Ariyattu C. Resmi and François Taïani. Filament: A cohort construction service for decentralized collaborative editing platforms. In *17th IFIP WG 6.1 International Conference on Distributed Applications and Interoperable Systems (DAIS 2017)*, pages 146–160, June 2017.