2018-00307 - R&D Engineer: Contributing to the development of SocialBus - A Universal Social Network Bus

Contract type: Public service fixed-term contract
Renewable contract: Oui
Level of qualifications required: Graduate degree or equivalent
Other valued qualifications: PhD thesis in computer science or equivalent
Function: Temporary scientific engineer
Level of experience: Up to 3 years

About Inria
Inria, the French National Institute for computer science and applied mathematics, promotes “scientific excellence for technology transfer and society”. Graduates from the world’s top universities, Inria’s 2,700 employees rise to the challenges of digital sciences. With its open, agile model, Inria is able to explore original approaches with its partners in industry and academia and provide an efficient response to the multidisciplinary and application challenges of the digital transformation. Inria is the source of many innovations that add value and create jobs.

Context
The SocialBus Research & Innovation Project

Computer-mediated communication can be defined as any form of human communication achieved through computer technology. From its beginnings, it has been shaping the way humans interact with each other, and it has influenced many areas of society. There exist a plethora of social interaction services enabling computer-mediated social communication (e.g., Skype, Facebook Messenger, Telegram, WhatsApp, Twitter, Slack, etc.). Based on personal preferences, users may prefer a social interaction service rather than another. As a result, users sharing the same interests may not be able to interact since they are using incompatible technologies.

To tackle the above interoperability barrier, we propose SocialBus, a middleware solution targeted to enable the interaction via heterogeneous social interaction services.

A first version of the SocialBus software is available under the AGPL open source license at https://gitlab.inria.fr/usnb/universal-social-network-bus.

References:
- Emil Andriescu, Thierry Martinez, Valerie Issarny. Composing Message Translators and Inferring their Data Types using Tree Automata. FASE 2015 : 18th International Conference on Fundamental Approaches to Software Engineering, 2015, LNCS. https://hal.inria.fr/hal-01097389.
- Rafael Angarita, Nikolaos Georgantas, Valérie Issarny. USNB: Enabling Universal Online Social Interactions. IEEE International Conference on Collaboration and Internet Computing, 2017. Best paper award. https://hal.inria.fr/hal-01591757.

General Information
- Theme/Domain: Distributed Systems and middleware
- Level of experience: Up to 3 years
- Town/city: Paris
- Inria Center: CRI de Paris
- Starting date: 4/1/18
- Duration of contract: 12 months
- Deadline to apply: 2/28/18

Contacts
- Inria Team: MIMOVE
- Recruiter: Issarny Valerie / valerie.issarny@inria.fr

The keys to success
The candidate should have interest and/or be willing to develop expertise in the development, from design to prototype implementation, of advanced software systems.

The candidate should have interest and/or be willing to develop expertise in online social networking and participatory systems.

The candidate should be both autonomous and a team-worker.

Conditions for application
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.

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Assignment

Contribution

As part of the further development of the USNB solution, the research engineer will specifically contribute to:

- Design and implementation of an automated solution to the synthesis of software mediators associated with the plugging of given social interaction services, while the current SocialBus implementation relies on the ad hoc, cumbersome and error-prone implementation of the required mediators by the developers.
- Customizing SocialBus to foster the participation of citizens in urban consultation processes. The work will subdivide into:
  - The study of workflows associated with participatory processes,
  - The elicitation of supporting middleware-relevant mechanisms,
  - The design and implementation of such mechanisms for the integration within SocialBus.

The work will go along with the adoption of adequate software engineering practices, and the production of documentation.

Main activities

The activities to be undertaken derive from the above expected contributions and include:

- Analyzing and getting to know the existing socialBus prototype implementation.
- Designing and implementing a solution to the automated synthesis of mediators for the connection of online social network services to the bus.
- Customizing SocialBus for large-scale participatory processes.
- Experimenting with, and assessing, SocialBus in the context of participatory processes.
- Ensuring the quality of the developed software.
- Producing the documentation associated with the developed software.

Skills

Expertise, including experience or at least knowledge in the following topics:

- Service oriented architectures,
- Middleware architectures and systems,
- Implementation on Java EE and/or Node.js,
- Implementation of Web APIs,
- Code generation,
- Use of data base management systems,
- Use of social networks.

Benefits package

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