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Full-time developer position opening at Université Grenoble-Alpes (ex UJF) for 2017

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This is an announcement for a full-time developer (Ingénieur de Recherche) position opening at Université Grenoble-Alpes, working on open source software engineering for computational mathematics.

contact: clement.pernet@imag.fr and jean-guillaume.dumas@imag.fr

Duration

For 2 years (one year renewable) starting early 2017. Interviews will be run in December 16 and January 17.

Salary

Approx. 2200 € of monthly *salaire net* (salary after non-wage labour cost but before income tax).

Location

The developer will work at the LJK lab. on the campus of Saint-Martin d'Heres, 15 minutes from Grenoble city center by public transportation.

Context

Exact linear algebra, computing with arbitrary precision integer or rationals, and over finite field, is a core component of computer algebra software and also plays a central role in numerous computation intensive applications, ranging from algebraic cryptanalysis to experimental mathematics. The LinBox library and its components,

the Givaro and the FFLAS-FFPACK libraries, form a C++ library ecosystem offering high performance implementation of the most common exact linear algebra routines. These open-source libraries are integrated in the SageMath open-source mathematics software.

Recently the FFLAS-FFPACK library has been parallized for multi-core architectures which opens way to two development directions:

- propose a framework and new implementations for distributed memory architectures and accelerators such as GPU and MIC;
- make SageMath's linear algebra's routines parallel by properly exposing the new features in the interface

Mission

The mission of the engineer will be to

- explore, experiment and develop new parallel implementations for exact linear algebra routines over distributed memory plateforms and GPU
- improve and maintain the interface between SageMath and LinBox;
- Participate actively in regular European development and training meetings with the other OpenDreamKit participants.
- maintain and improve the continuous integration system for the linbox ecosystem

Skills and background required

- Development in Linux-like environments;

- Experience with git

- Experience with code optimisation, parallelism (OpenMP, MPI), debugging (valgrind, gdb);

- Fluency in several of C, C++, Python, Cython;

- Fluency in English;

The following are not prerequisites but would be very much appreciated:

- Experience in open-source development (collaborative development tools, interaction with the community, …);

- Experience with computational mathematics software, in particular SageMath or LinBox;

- Mathematics background.

Applications

Applicants should send an email to clement.pernet@imag.fr and jean-guillaume.dumas@imag.fr with:

- A complete CV

- A motivation letter

Both documents must be in an open format (pdf, ps, plain text, …) either in french or english.

Context

The position will be funded by

OpenDreamKit, a Horizon 2020 European Research Infrastructure project that will run for four years, starting from September 2015. This project brings together the open-source computational mathematics ecosystem – and in particular LinBox, MPIR, SageMath, GAP, Pari/GP, LMFDB, Singular, MathHub, and the IPython/Jupyter interactive computing environment. – toward building a flexible toolkit for Virtual Research Environments for mathematics. Led by Université Paris-Sud, this project involves about 50 people spread over 15 sites in Europe, with a total budget of about 7.6 million euros.

The developer will work within a team of developpers of SageMath and LinBox, and researchers in the field of high performance computer algebra at the Laboratoire Jean Kuntzmann.

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