

Load Balancing for Parallel Coupled Simulations

Type of job offer: post-doc

Location: Inria Bordeaux – Sud-Ouest (campus Talence, Université de Bordeaux)

Research domain: Calcul distribué et à haute performance

Inria Team-Project: HiePACS

Duration: 18 months

Targeted hiring date: november 2017 (before june 2018)

Salary: ??? / month

Mission

Optimization and implementation of new algorithms for balancing the load of coupled simulations.

Job offer description

In the context of the french ICARUS project, which focuses the development of high-fidelity calculation tools for the design of hot engine parts (aeronautics & automotive), we are looking to develop new load-balancing algorithms to optimize the complex numerical simulations of our industrial and academic partners (Turbomeca, Siemens, Cerfacs, Onera, ...).

Indeed, the efficient execution of large-scale coupled simulations on powerful computers is a real challenge, which requires revisiting traditional load-balancing algorithms based on graph partitioning.

A thesis on this subject has already been conducted in the Inria HiePACS team in 2016, which has successfully developed a *co-partitioning* algorithm that balances the load of two coupled codes by taking into account the coupling interactions between these codes. We propose in this post-doc to continue this work by extending the proposed algorithms to parallel and dynamic versions and evaluating these algorithms in the real-life applications of our partners.

Other fields of investigation around this subject are also conceivable depending on the particular background of each candidate.

Library MetaPart : <https://gitlab.inria.fr/metapart>

PhD M. Predari : [Load Balancing for Parallel Coupled Simulations](#)

Required Skills

This position is intended for candidates with a strong background in computational sciences : high-performance computing, parallel algorithmics, graph partitioning, programming in C, CMake, GIT. English language mandatory.

Benefits

Restauration on site, Financial participation for public transport, Social and sporting activities
French courses.

Additional information

In order to apply, send a CV, a reference letter and the contact details of 2 or 3 academic references to aurelien.esnard@inria.fr