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28 yo – French-Swiss citizenship

François Tessier

Education

- 2015 **Ph.D.**, *University of Bordeaux - LaBRI - Inria, TADaaM Team.*
Placement of Parallel Applications According to the Topology and the Affinity
- 2010 **Master's Degree**, *University of Bordeaux.*
Software Engineering
- 2008 **Bachelor's Degree**, *University of Bordeaux.*
Computer Science
- 2007 **DUT (Two-years technical University degree)**, *University of Bordeaux.*
Computer Science

Thesis

- Title **Placement of Parallel Applications According to the Topology and the Affinity**
- Advisors Emmanuel Jeannot and Guillaume Mercier
- Keywords High performance computing, parallelism, locality, affinity, topology, placement, load balancing.
- Abstract Computer simulation is one of the pillars of Sciences and industry. Climate simulation, cosmology, or heart modeling are all areas in which computing power needs are constantly growing. Thus, how do we scale these applications? Parallelization and massively parallel supercomputers are the only ways to achieve this. Nevertheless, there is a price to pay considering the hardware topologies incessantly complex, both in terms of network and memory hierarchy. The issue of data locality becomes central: how to reduce the distance between a processing entity and data to which it needs to access? Application placement is one of the levers to address this problem. In this thesis, we present the TREEMATCH algorithm and its application for static mapping, that is to say at the launchtime of the application, and the dynamic placement. For this second approach, we propose the awareness of data locality within a load balancing algorithm. The different approaches discussed are validated by experiments both on benchmarking codes and on real applications.

Work Experience

- Jan. 2015 **Postdoctoral position**, *Inria Bordeaux, Talence, France.*
- Now Topology and affinity-aware application placement and load balancing: improvement of the TREEMATCH algorithm designed to compute an efficient processing entities placement, work on load balancing algorithm for Charm++ taking into account the topology and the affinity (publication in progress). Data locality in parallel I/O in collaboration with ANL.
- Oct. 2010 **Engineer**, *Inria Bordeaux, Talence, France.*
- Oct. 2011 Software development around StarPU, a runtime system for heterogeneous architectures within the Runtime Team. Improvement of CFD code for the CEA² (Atomic Energy and Alternative Energies Commission).
- Nov. 2009 **Web developer**, *Solution Interactive, Mérignac, France.*
- Oct. 2010 Development of web portals using the Symfony framework. Integration of free web solutions.

- May 2009 **Internship**, *Noldus Information Technology*, Wageningen, Netherlands.
Jul. 2009 Voluntary internship: research and development for a tool designed to track ships GPS data in the context of the Poseidon project (maritime safety).
- Apr. 2007 **Internship**, *Technology Evaluation Center*, Montreal, Canada.
Jun. 2007 Development of tools for SEO and mail campaigns.

Publications

International Journal with Committee

- [1] **IEEE Transactions on Parallel and Distributed Systems**, *Emmanuel Jeannot, Guillaume Mercier and François Tessier*, "Process Placement in Multicore Clusters: Algorithmic Issues and Practical Techniques", (Apr. 2014).

International Conference with Committee

- [2] **IEEE Cluster 2013**, *Emmanuel Jeannot, Esteban Meneses, Guillaume Mercier, François Tessier and Gengbin Zheng*, "Communication and Topology-aware Load Balancing in Charm++ with TreeMatch", Indianapolis, IN - USA (Sep. 2013).

National Conference with Committee

- [3] **21e Rencontres Francophones du Parallélisme**, *Emmanuel Jeannot, Guillaume Mercier and François Tessier*, "TreeMatch : Un algorithme de placement de processus sur architectures multi-cœurs", Grenoble - France (Jan. 2013).

Talks

- Jun. 2014 **11th workshop of the Joint Laboratory for Petascale Computing**, *Sophia-Antipolis*, France, "Distributed communication-aware load balancing with TreeMatch in Charm++".
Jul. 2014 **9th Scheduling for Large Scale Systems Workshop**, *Lyon*, France, "Distributed communication-aware load balancing with TreeMatch in Charm++".
Jun. 2013 **9th workshop of the Joint Laboratory for Petascale Computing**, *Lyon*, France, "Communication-aware load balancing with TreeMatch in Charm++".
Jun. 2012 **7th workshop of the Joint Laboratory for Petascale Computing**, *Rennes*, France, "Load balancing and affinities between processes with TreeMatch in Charm++ : preliminary results and prospects".
May 2012 **10th Charm++ Workshop**, *Urbana-Champaign, IL*, USA, "Process placement on multicore. Dynamic load balancing in Charm++".

Collaborations and Visits

Joint Laboratory for Extreme Scale Computing

- Mar. 2015 **Argonne National Laboratory**, *Argonne, IL*, USA, (Two weeks) Work on data locality in parallel I/O.

Joint Laboratory for Petascale Computing

- Aug. 2013 **Parallel Programming Laboratory**, *Urbana, IL*, USA, (One week) Work on a distributed and parallel affinity-aware load balancer for Charm++.
May. 2012 **Parallel Programming Laboratory**, *Urbana, IL*, USA, (Two weeks) Participation in the 10th Charm++ Workshop and work on affinity-aware load balancing.
Nov. 2011 **NCSA**, *Urbana, IL*, USA, Listener of the 8th JLPC Workshop.

Scientific Mediation

- Nov. 2014 **SC14**, *New Orleans*, USA, Demonstration of the 3d-printed and free humanoid robot Poppy for the Inria booth.
- Now. 2014 **EDMI**, *Talence*, France, Presentation of a part of my thesis during the poster session.

Teachings

University of Bordeaux

- 2013 - 2014 System programming, operating systems, advanced database (HCM, Vietnam)

ENSEIRB

- 2012 - 2013 System programming, operating systems, project: thread library in userspace.

Miscellaneous

- Association Vice-president of the associative DIY ISP Aquilenet
Board's member of the associative DIY ISPs federation FFDN