

Julien Loiseau

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My research focuses on the challenge inherent to designing the architecture of exascale supercomputers. The main limitations are the power consumption and the versatility of the architecture. There are many hardware possibilities to consider: CPUs, GPUs, FPGAs, ARM CPUs or co-processors like Xeon Phi. I first worked on CPU and GPU technology to implement an efficient massively parallel method for solving combinatorial problems. We broke a world record on the academic Langford problem using 181 CPUs/GPUs. We are currently working on the GRAPH500 benchmark to evaluate the memory access and the interconnect of the ROMEO supercomputer.

Education

- 2015 - present **PhD candidate**, *CRéSTIC Laboratory, University of Reims Champagne-Ardenne (URCA)*, Reims, France.
Title: "Energy efficiency, exascale computing and complex systems"
Thesis Advisor: Michaël Krajecki.
- 2013 - 2015 **MSc in Computer Science, Development of parallel and distributed applications**, *URCA*, with high honors and first in graduating class.
- 2010 - 2013 **BSc in Computer Science**, *URCA*, with honors.

Research

- Papers
- **Parcours de grands graphes sur architecture hybride CPU/GPU.** *J Loiseau, F Alin, C Jaillet and M Krajecki.* MARAMI and JFGG conference, October 14-16 2015, Nîmes, France.
 - **Towards the Parallel Resolution of the Langford Problem on a Cluster of GPU Devices.** *H Deleau, C Jaillet, M Krajecki, J Loiseau, L-A Steffemel, F Alin.* CSC14: The Sixth SIAM Workshop on Combinatorial Scientific Computing. July 21-23 2014, Lyon, France.
- Talks
- **Résolution massivement parallèle de problèmes combinatoires; cas particulier du problème de Langford.** RGE (Réseau Grand Est). June 2014, Colmar, France.
 - **Solving combinatorial problems on large multiGPU clusters: Breaking the challenge of the Langford problem.** ROMEO supercomputing day. June 2014 and 2015, URCA Reims France.
- Posters
- **Massively Parallel Resolution of Combinatorial Problems on MultiGPU Clusters.** GTC Technology Conference 2015. March 2015, San Jose, USA.
 - **Langford Problem: Massively Parallel Resolution on a MultiGPU Cluster.** *H Deleau, C Jaillet, M Krajecki, J Loiseau, L-A Steffemel, F Alin.* CSC14: The Sixth SIAM Workshop on Combinatorial Scientific Computing. July 21-23 2014, Lyon, France.

Skills

- HPC Unix, Bash, **C/C++** with **CUDA**, **OpenMP** and **MPI**. Environment of a supercomputer.
- Others Java/J2EE/Android, HTML/PHP/Ajax/JavaScript.
- Software Visual Studio, Eclipse, NetBeans, Nsight, NVIDIA Visual Profiler.
- Languages **English:** very good command. **French:** native speaker.

Activities and interests

- Dev. Website development, Android applications, embedded technologies.
- Sport Running