Gonzalo Martín

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Summary

Software engineer (B.Sc.+M.Sc.) finishing a Ph.D. in computer science with experience in software development for large-scale systems and looking for new challenges.

Skills and expertise

Programming languages [*Strong knowledge and experience in*] C, C++, Python, Bash scripting, MatLab, SQL (MySQL), LaTeX [*Knowledge of*] Django (Python web framework), Objective-C, Java, JavaScript (+node.js), PHP, HTML, CSS, NoSQL (MongoDB)

Software OpenStack (cloud computing), Git (distributed version control), Puppet (Automation software)

Expertise Software development; back-end software development; parallel programming; cloud computing; UNIX systems administration

Experience

Software Engineer and Research Assistant - Carlos III University - 2010—2013
Research, development, and deployment of the back-end system of a distributed platform for gaming in the cloud. The system was deployed using technologies as OpenStack and Puppet. During this period I started my research on optimization techniques for enhancing the performance and adaptability of MPI applications. I was also involved in the development of EpiGraph, a distributed simulation tool for epidemiological studies.

Education

Ph.D. in Computer Science - Carlos III University - 2012—May 2014 (expected)
Optimization Techniques for Adaptability in MPI Applications
My research focus on dynamic parallel MPI applications. I have developed FLEX-MPI, an extension to the MPI library written in C (+10,000 SLOC) for supporting dynamic reconfiguration and dynamic load balancing. Dynamic reconfiguration allows the MPI application to change the number of processes at runtime to cope with varying workloads and changing resources availability thus maximizing resources utilization.

M.Sc. in Computer Science and Technology - Carlos III University - 2010—2011

B.Sc. in Computer Science and Engineering - Carlos III University - 2005—2010

Collaboration in research projects

NIMBO: Distributed video games - Carlos III University - 2010—2013
Reference: IPT-430000-2010-14
Supported by Spanish Ministry of Science and Education (958,851.76€)
The goal of the project was the deployment of a distributed platform for a cloud-based video game system.

Publications

Journal papers

Gonzalo Martín, Maria-Cristina Marinescu, David E. Singh and Jesús Carretero, ”Leveraging social networks for understanding the evolution of epidemics”, BMC Systems Biology, vol. 5, Suppl: 3(14), 2011.

Conference papers

Gonzalo Martín, Maria-Cristina Marinescu, David E. Singh and Jesús Carretero, ”FLEX-MPI: an MPI extension for supporting dynamic load balancing on heterogeneous non-dedicated systems”, in *Euro-Par*, 2013.

Gonzalo Martín, Maria-Cristina Marinescu, David E. Singh and Jesús Carretero, ”Parallel algorithm for simulating the spatial transmission of Influenza in EpiGraph”, in *International Workshop on Parallelism in Bioinformatics - The 20th European MPI Users' Group Meeting, EuroMPI*, 2013.

Pablo Llopis, **Gonzalo Martín**, Borja Bergua and Jesús Carretero, ”Virtual I/O forwarding for cloud-based HPC applications”, in *The 10th International Symposium on Parallel and Distributed Processing with Applications, ISPA*, 2012.

Gonzalo Martín, Maria-Cristina Marinescu, David E. Singh and Jesús Carretero, ”Runtime support for adaptive resource provisioning in MPI applications”, in *The 19th European MPI Users' Group Meeting, EuroMPI*, 2012.

Gonzalo Martín, Maria-Cristina Marinescu, David E. Singh and Jesús Carretero, ”EpiGraph: A Scalable Simulation Tool for Epidemiological Studies”, in *The 2011 International Conference on Bioinformatics and Computational Biology, BIOCOMP'11*, pp. 529-537, 2011.

In review

Gonzalo Martín, David E. Singh, Maria-Cristina Marinescu and Jesús Carretero, ”Enhancing the performance of malleable MPI applications by using performance-aware dynamic reconfiguration”, submitted to Journal of Parallel Computing on February 2013. In review.

Research stay	Computer Architecture research team - Uppsala University - Sweden - 2013 Short-time research stay under the supervision of Dr. David Black-Schaffer. The purpose of this visit was to collaborate in the research of optimization techniques for enhancing the performance of parallel applications which execute on shared-memory processors. Supported by EU COST (European Cooperation in Science and Technology) Action IC0805 - Open Network for High-Performance Computing on Complex Environments. Grant: 1,500 €. Period: May 29, 2013—June 8, 2013.
International summer school	Complex HPC Spring School 2013 - Uppsala University - Sweden - 2013 International summer school for doctoral students in HPC and heterogeneous computing.
Contributions to the scientific community	Reviewer for Journal of Future Generation Computer Systems Reviewer for The 10th International Symposium on Parallel and Distributed Processing with Applications, ISPA Member of the organizing committee of The 20th European MPI Users' Group Meeting, EuroMPI 2013

February 2014.