February 13, 2016

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To Whom It May Concern,

This is an application letter for the position of HPC application Specialist at the Swiss National Supercomputing Center. My qualifications include a Ph.D. Degree from Universitat Politecnica de Catalunya, Barcelona, Spain. During this period I was a part of the Programming Models group at the Barcelona Supercomputing Center (BSC). My advisors were Rosa M. Badia and Eduard Ayguade. My Doctoral thesis is focused on speculative synchronization techniques for the StarSs framework, a task-based programming model. My work included the development of StarSs compiler and runtime features that handle synchronization of multiple threads. I have used the Transactional Memory framework to achieve the thread synchronization in StarSs. As a part of the programming models group, I was also involved in the design and implementation of parallel algorithms that use the StarSs framework. Currently I am working as a Technical Specialist in High Performance Computing Group of Wipro Infotech.

My work has been published in *EuroPar 2012* and *HiPC 2013* conferences as well as in *MULTIPROG, 2015* workshop. I am also the co-author of a journal paper published in *Microprocessors and Microsystems, 2014* which explains the work accomplished as a part of the Teraflux project which was sponsored and supported by the European Union. My resume contains the information of all my publications and their references.

My present work is along the same lines as my research at BSC. I provide technical assistance to clients who wish to parallelize their code and take advantage of their multicore infrastructure. Depending on their requirement, I collaborate with them on the design, implementation or on both to help them improve the performance of their application/algorithm. Currently I am working on a project called Moose, which involves simulation of neurons in human brain. The project was designed and implemented at the National Center for Biological Sciences, India (NCBS). The multiscale characteristic of this project allows both distributed and shared memory parallelization to be introduced to speedup the simulation. Currently, I am focussed on the thread-based implementation using pthreads, where each thread updates a part of the cell structure at every timestep. Later on, the project will include simultaneous updates of different cells on different nodes, which in turn will use threaded parallelism.

My background in mathematics helps me develop novel ideas for parallelization of algorithms and efficient ways to implement them. That combined with my knowledge of parallel programming models and my current project makes my skill set match the requirements of the job posting. I also have basic knowledge about the GPU architecture, CUDA programming and Intel's Xeon Phi processor. As a part of the programming models group at Barcelona Supercomputing Center (http://www.bsc.es/computer-sciences/programming-models), I have also learned to effectively collaborate with other engineers to achieve the set goals. Given my experience and background, I feel my skill set matches the requirements of the job. Additionally, I feel the position gives me a platform to solve interesting and challenging problems and hence I request you to consider my application.

Please let me know if there are any other materials or information that will assist you in processing my application. The earliest that I can start working at ETH is June, 2016. Thank you for your consideration. I look forward to hearing from you.

Sincerely,

Rahulkumar Gayatri