



**Aquitaine –Karnataka collaboration
Scientific Project for Pre-PhD student exchange
Scientific Proposal**

Project Title	MAP/Reduce aware based VM size Prediction & VM Placement strategy for Data Analytics	
Scientific domain	Cloud Computing, MAP/Reduce, Performance Modelling	
Summary (ca. 10 lines)	<p>Data analytics is increasingly instrumental in delivering value to businesses. Effective Analysis of very large volumes of data is a challenging task. MapReduce and MapReduce-like models are widely used in Data Analytics automatically parallelize the application on a cluster of computers. Clouds are becoming a popular platform for Data Analytics because of its elastic nature (provisioning virtual machines on demand). Virtual Machines (VMs) can be created by considering Computation load, Storage load and Network load.</p> <p>For effective execution of Map-Reduce application the following issues have to be addressed</p> <ul style="list-style-type: none"> • Dynamic configuration of VMs by considering Map/Reduce Computation and storage • VM placement strategy to improve the performance of the Application <p>Considering the above issues, the objectives of the project are to build a strategy to predict/compute the size of the VM (CPU, RAM and Storage) required for MAP/Reduce Task and to build a strategy to place VMs effectively in order to achieve better performance.</p>	
Student profile wished	Student experience in distributed computing concepts. Familiarity with Parallel computing and Cloud Technology will be an added advantage	
Supervisor Name	Dr. SANJAY H A	
Supervisor @ & phone	@: sanju.smg@gmail.com	Tel: +919342560303 (Cell) +918022167864 (Office)
Institute/laboratory/industry (full address)	Parallel, Grid & Cloud Computing Laboratory, Dept. of Information Science & Engineering, Nitte Meenakshi Institute of Technology, Yelahanka, Bangalore-560064	
Director Name Institute/laboratory/industry	Dr. H C Nagaraj	
Director Institute/laboratory/industry @ & phone	@: principal@nmit.ac.in	Tel: +918022167803(Office) +919845275240 (Cell)
Timing & duration for project (give approximate ranges)	4-6 Months , starting from July 2015	
Selected Publications	<ul style="list-style-type: none"> • H. A. Sanjay, S. Vadhiyar, “Performance Modeling of Parallel Applications for Grid Scheduling”, Journal of Parallel and Distributed Computing , Vol 68/8 pp 1135-1145, 2008. • M. K. Mohan Murthy, H. A. Sanjay, Jumnal Anand, “Threshold Based Auto Scaling of Virtual Machines in Cloud Environment”, 11th IFIP WG 10.3 International Conference, NPC 2014, Iilan, Taiwan, September 18-20, 2014. • Ashwini J P, Divya C and Sanjay H A, “Efficient Resource Selection Framework to Enable Cloud for HPC applications” in International Conference on Computing and Communication to be held in Jawaharlal Nehru National Institute of Technology, Allahabad, September 2013 	
Contact Aquitaine: Erick Dufourc @: e.dufourc@cbmn.u-bordeaux.fr tél: +33 5 4000 6818	Contact Karnataka: Dipankar das Sarma @: sarma@sscu.iisc.ernet.in tél: +91 80 2293 2945	
http://www.cbmn.u-bordeaux.fr/aquitaine-karnataka-exchange?lang=2		



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