A WORKSHOP ON NEXT GENERATION COMPUTING PARADIGMS

Cloud Computing; Map Reduce; Parallel Programming; Multi-core Architecture; Virtualization, Configware

May 09, 2009

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The increased complexity and heterogeneity of hardware resources and the ineffectiveness or inability of existing computing and programming paradigms to exploit the technology are leading to the emergence of parallel and distributed programming paradigms and computing systems. The introduction of multi-core technology and cloud computing are some of the examples. Although parallel and distributed computing and systems have existed for many decades, parallelism within a single system using nanotechnology and virtualization, and its usage in a distributed environment has revived the art of parallel and distributed computing.

High Performance Computing & Networking Lab (HPCNL) at KICS-UET, Lahore presents this workshop the need for next generation computing paradigms along with the demonstration of some of the leading techniques. The workshop will begins with the not so clearly understood concept of cloud computing as a computational model which is also referred to as a cluster computing. From there we will move to another interesting cluster based parallel programming model called 'MapReduce'. MapReduce is a simplified but very powerful parallel programming paradigm invented by Google later championed by Amazon and Yahoo. The complications of parallelism are hidden from the end user, but this simplicity is at the cost of lost generality. i.e. MapReduce cannot solve all kind of parallel problems. From here we move to more generic (and complicated) parallel programming paradigms. At this point you will be able to appreciate the simplicity – generality tradeoff clearly. Then we move to the domain of multi-core benchmarking. These banchmarks serve as the yardstick to measure system component performance and to find any hot spots. Then we present an area where cluster / cloud based systems are heavily used. This area is virtualization. Current surge of many-core systems have revitalized this old idea of virtualization. Towards the end we will introduce configware which provides an alternate prospective to software parallel computing.

The workshop will provide a forum discuss these interesting ideas.

Timings	Workshop Program
09:45 AM	**Opening Ceremony**
10:00 AM	**Cloud Computing and MapReduce Paradigms** **Presenter:** Abdul Qadeer, Phd Scholar, USC, USA
11:00 AM	**Tea Break**
11:30 AM	**Parallel Programming Paradigms** **Presenter:** Ghulam Mustafa, PhD Scholar, HPCNL, KICS-UET, Lahore
12:30 AM	**Performance Characterization of Multi-core Architecture** **Presenter:** Mohammad Hasan Jamal, PhD Scholar, HPCNL, KICS-UET, Lahore
1:30 PM	**Lunch and Prayer Break**
3:00 PM	**Understanding Performance and Security Issues in Cloud Computing and Virtualization** **Presenter:** Fasiha Ashraf, Ph.D Scholar, HPCNL, KICS-UET, Lahore
3:45 PM	**Introduction to Configware Computing, an alternative perspective to software parallelism** **Presenter:** Fahad Ahmed Khan, Ph.D. Scholar, Georgia Tech, USA
4:30 PM	**Closing Ceremony**

For free registration please visit our website www.kics.edu.pk

Or contact us at admin@kics.edu.pk, Ph: 042-6842358, 9029450. Seats are limited and will be awarded on first come first serve basis.