



**THE CHINESE UNIVERSITY OF HONG KONG**  
Department of Information Engineering

*Seminar*

**Towards Guaranteed Cloud Services  
in an Uncertain World**

by

**Mr. Di Niu**  
University of Toronto  
Canada

**Date : 13 April, 2012 (Fri.)**  
**Time : 11:00am-12:00noon**  
**Venue : Room 833 Ho Sin Hang Engineering Building**  
**The Chinese University of Hong Kong**

*Abstract*

Cloud computing is redefining the way that Internet services are operated. Traditionally, an enterprise invests in infrastructures to accommodate the peak demand, inevitably incurring underutilization. Relying on the cloud, an application can now auto-scale its resource pool to dynamically match its demand, reducing service costs. However, the tradeoff is that resource sharing in the public cloud may lead to uncertain network performance. In this talk, I will show how to provide service guarantees in cloud computing using demand prediction and risk-aware optimization. I use a case study of video-on-demand (VoD) applications to illustrate our idea, based on the workload analysis of a large-scale production VoD system. I will then describe my recent work on cloud pricing based on demand statistics, which also serves as a leverage to optimize resource allocation in the cloud.

*Biography*

Di Niu is a Ph.D. candidate in the Department of Electrical and Computer Engineering at the University of Toronto. He received his B.Engr. degree in 2005 from Sun Yat-sen (Zhongshan) University, Guangzhou, China, and his M.A.Sc. degree in 2009 from the Department of Electrical and Computer Engineering, University of Toronto. He is a recipient of the NSERC Postgraduate Scholarship of Canada and was a recipient of the NSERC Alexander Graham Bell Canada Graduate Scholarship from 2006 to 2008. His research interests span the areas of cloud computing, multimedia systems, and peer-to-peer networks, with a focus on the use of data mining, statistical learning, optimization, economics theory and network coding to understand and improve real-world systems.

**\*\* ALL ARE WELCOME \*\***

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