香港浸會大學理學院
HKBU Faculty of Science

for favour of posting

**DEPARTMENT OF COMPUTER SCIENCE**

**MPhil Degree Oral Presentation**

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| MPhil Candidate: | Mr Ka Fung NG |
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| External Examiner: | Dr Churn Jung LIAU |
| Time: | 18 March 2008 (Tuesday)<br>10:00 am – 12:00 nn (35 mins presentation and 15 mins Q & A) |
| Venue: | SWT 504, Committee Room, Shaw Tower, Shaw Campus |

# "Designing and Implementing Relaxed-Criteria G-Negotiation Agents"

## Abstract

Grid is a network computing system platform with very large number of heterogeneous machines interconnected for resources sharing, to address virtually unbounded demands from applications. Effective management of resources is thus regarded as the key to realize vision of grid computing. However, providing a mechanism for allocation resources to different applications in an efficient manner is a difficult and challenging task, due to the scale and complexity of grid. Instead of traditional centralized management approach, Grid Commerce has emerged as a decentralized, market-oriented framework for self-organization of grid resources, where resource providers charge consumers for services or leasing out resources.

As each service consumer and provider has different set of preferences, requirements, objectives and policies, negotiation among grid participants is necessary prior to the use or lease of resources. This thesis provides empirical evidence to further support Sim's claim that market-driven agents (MDA) are appropriate mechanisms for grid resource negotiation, where MDA are e-negotiation agents designed to bargain trading terms of resources with trading partners. With a focus on computational grid, the aim of this work is to develop a testbed for simulating Grid resource management using Sim's MDAs and relaxed-criteria negotiation protocol. Whereas MDAs make adjustable amounts of concession based on different market situations and trading alternatives, Sim's relaxed-criteria protocol augments the alternating offers protocol by allowing agents to reach agreements if their proposals are sufficiently close. Adopting and adapting some of the ideas from Sim and Wang's enhanced market-driven agents, this work designs and implements two fuzzy decision controllers with two sets of relaxation criteria: one for consumer agents and one for provider agents. Empirical results generated using our testbed show that by slightly relaxing bargaining criteria when agents are under intense negotiation pressure, negotiation speed and chance of leasing or acquiring resources can be improved without sacrificing significant trading utility. Additionally, this work implements some of Sim's ideas of relaxed-criteria negotiation for Grid resource co-allocation by developing a testbed consisting of consumers that attempt to acquire multiple resources for simultaneous access. Empirical results generated using the testbed to simulate Grid resource co-allocation together with their analyses are also presented.

***** ALL INTERESTED ARE WELCOME*****