CS5224: Cloud Computing

AY2018/19 – Semester 2

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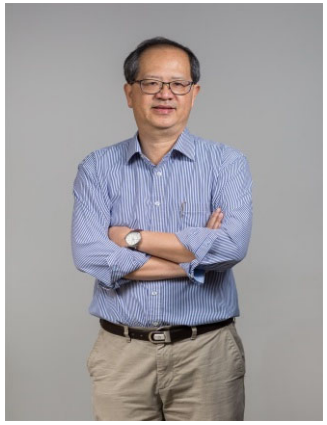


My Interests

Research: modelling (performance and simulation),
parallel computing (cloud, edge)

Teach: Parallel Computing, Cloud Computing,
Computer Systems Performance Analysis, …

Best Paper Awards

1. L. Birdsey, C. Szabo and Y.M. Teo, **Twitter Knows: Understanding the Emergence of Topics in Social Networks,** Proc of Winter Simulation Conference, IEEE Computer Society Press, US, Dec 6-9, 2015. [**WSC 2015 Best Paper Award**]
2. M. Mihailescu and Y.M. Teo, **Strategic-Proof Dynamic Resource Pricing of Multiple Resource Types on Federated Clouds**, Proc of 10th International Conference on Algorithms and Architectures for Parallel Processing, Busan, Korea, May 21-23, 2010. [**Best Paper Award**]
3. C. Szabo, Y.M. Teo and S. See, **A Time-based Formalism for the Validation of Semantic Composability,** Proc of the Winter Simulation Conference, pp 1411-1422, IEEE Computer Society Press, Austin, Texas, USA, December 13-16, 2009. [**ACM SIGSIM Best PhD Student Paper Aw**ard]

Cloud Computing

Learning Objectives

1. Explains and discusses fundamental aspects of cloud computing concepts, models, technologies and applications

2. Hands-on: IBM Bluemix and Amazon Web Services with examples in developing applications using IaaS, PaaS and SaaS

3. Develop business case for cloud computing application

Learning Objectives

1. Explains and discusses fundamental aspects of

- Class with varied knowledge – MComp, MSBA, graduate, undergraduate, ..
- Introductory module
- Teaching mode: lectures, programming assignments (IBM Bluemix and Amazon AWS), group project (develop SaaS application that puts all you have learnt together)

What will we cover?

A. Principles of Cloud Computing
L01: Introduction
L02: Concepts & Models

B. Technologies, Programming and Applications
L03: Technologies behind Cloud Computing
L04: Cloud Architecture
L05: Applications & Paradigms
L06: Cloud Infrastructure
Hands-on:
H01: IBM Cloud Services (PaaS, SaaS)
H02: Amazon Web Services (IaaS, PaaS, SaaS)
Examples:
L07: K-means Clustering using Elastic MapReduce (IaaS, PaaS) & Building a Video-Sharing SaaS Cloud Application
L08: Google Datacenter Software Stack

C. Cloud Management
L09: Pricing Models and Modeling TCO

D. Summary & Conclusion
L10: Summary and Open Issues

Course Schedule & Webpage

- Lecture: Tue 7-9pm+1, LT14 (AS6)
- Tutor: Zhang Han (Com 2, #B1-01)
- Consultation:
  - Wed 2-3pm (Yong Meng)
  - Thu 1-3pm (Han)
- Webpage:
  - IVLE for course announcement
  - www.comp.nus.edu.sg/~teoym/cs5224-19 for lecture slides, assignments, etc.

IVLE Forum

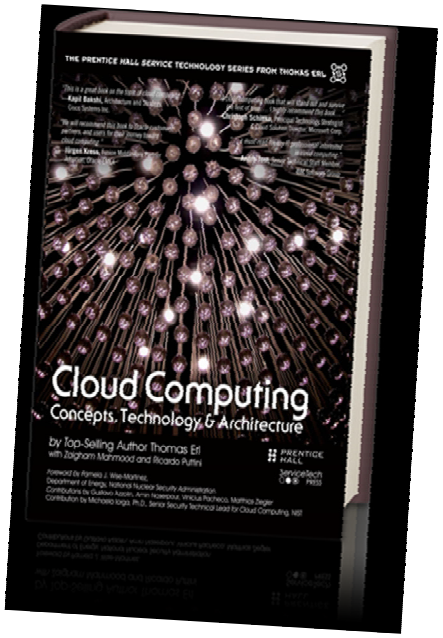
Additional avenue for discussion - using cloud services, assignments, project, etc

Please post to the respective forum pages:

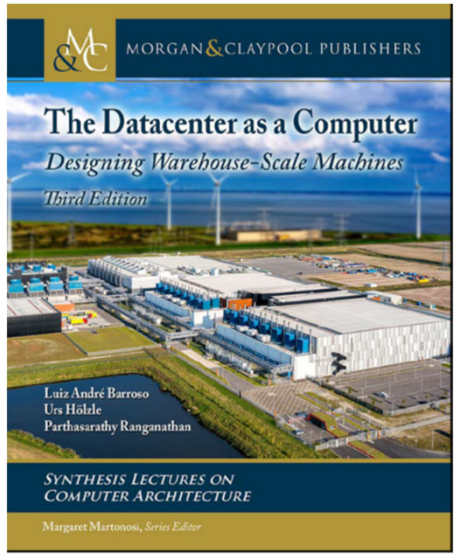
1. IBM Bluemix Cloud
2. Amazon Web Services
3. Project Assignment

Main Text

1. *Cloud Computing: Concepts, Technology & Architecture,* Thomas Erl, et al., Prentice-Hall, 2013, 2 copies at RBR in Central Library. [chapters 3, 4, 5, 11, 15 & 16]



2. The Datacenter as a Computer – Designing Warehouse-Scale Machines, 3rd Edition, Morgan & Claypool Publishers, 2019 (available online) [chapters 1, 2, 3, 4, 6]



Module Assessment

- Full CA

- Programming Assignment 1: Bluemix (individual): 10%
- Programming Assignment 2: AWS (individual): 10%

- Project (group): 30%

- Quiz (closed book): 20%

- Test (closed book): 30%