

Computer Architecture

计算机体系结构

Introduction

课程介绍

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授课教师 Instructor

- **Education**

- PhD, University of Florida
- BS (with honors), Zhejiang University

- **Experiences**

- Shanghai Jiao Tong University (2014-Present)
 - Tenure-Track Associate Professor
 - Tenure-Track Assistant Professor
- University of Florida (2009-2013)
 - Graduate Research Assistant

- **Research Interests**

- High-Performance Computer Architecture
- Energy-Efficient Computers of Different Scales



时间安排 Schedule

- 排课：第1-16周
- 每次授课包括3个课时
 - 12:55-13:40
 - 14:00-14:45
 - 14:55-15:40
- 地点:东中院4-201

考核要求 Grading

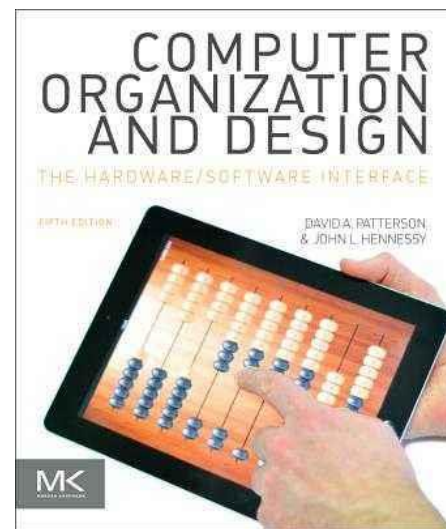
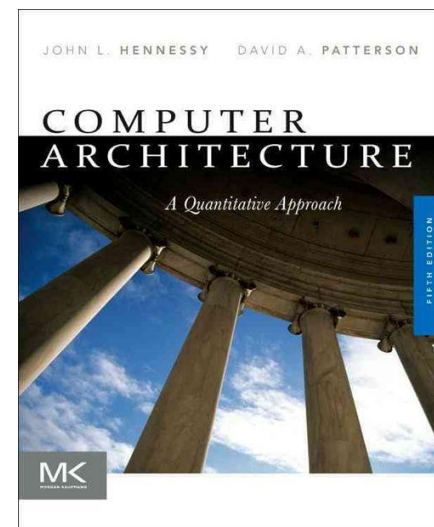
- 学期测验 (40%) - Two Quizzes
 - 课程实验 (10%) - Lab Assignments
 - 课堂参与 (10%) – Participation
 - 期末考试 (40%) - Final
- } 平时成绩

辅导时间 Office Hour

- 课件：<http://www.cs.sjtu.edu.cn/~lichao/cn/slides-cn.html>
 - 往年课件仅供参考，本年度版本会逐步更新
- 助教：王鹏宇
 - 协助考试、阅卷、实验、答疑等事项
 - wpybtw [at] sjtu.edu.cn
- 答疑：教师不回复任何答疑邮件
 - 接受时间预约，在办公时间提供当面辅导和答疑
 - lichao [at] cs.sjtu.edu.cn
- 地点：闵行区电信群楼3-526
 - 其它信息请参见教师主页：<http://www.cs.sjtu.edu.cn/~lichao/>

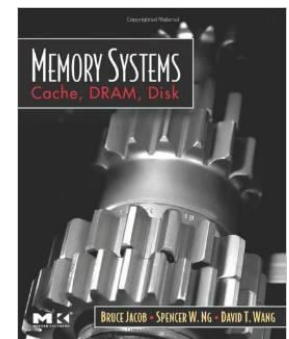
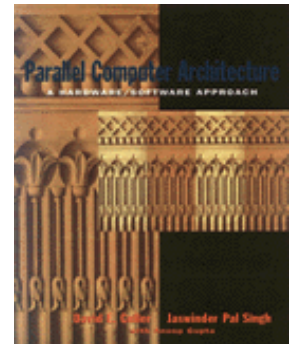
主要教材 Text Book

- **Computer Architecture: A Quantitative Approach**
 - J. Hennessy和D. Patterson撰写的《计算机体系结构：量化研究方法》是计算机体系结构教学科研人员的重要参考书
- **Computer Organization and Design: The Hardware - Software Interface**
 - J. Hennessy和D. Patterson撰写的《计算机组成和设计：硬件/软件接口》是计算机组成原理的重要入门参考书



推荐读物

- **Parallel Computer Architecture: A Hardware/Software Approach**
 - By David E. Culler et al.
- **Memory Systems: Cache, DRAM, Disk**
 - By Bruce Jacob et al.
- **Synthesis Lectures on Computer Architecture**
 - Mark D. Hill 主编的一系列讲义。每份讲义覆盖一个主要话题，通过100页左右的中等篇幅浓缩了近年体系结构的重要设计思想，主要内容来自于顶级会议 ISCA、HPCA、MICRO、ASPLOS等发表的论文



课程安排: Course Organization

Date	Topics	Note
1 / Mar 1	Overview	
2 / Mar 8	Instruction Set Architecture	
3 / Mar 15	Instruction-Level Parallelism I	
4 / Mar 22	Instruction-Level Parallelism II	
5 / Mar 29	Cache Organization and Memory	
6 / Apr 5	Storage System and I/O	1 st Quiz
7 / Apr 12	Performance Evaluation Methodology	
8 / Apr 19	Multiprocessors and Thread-Level Parallelism	
9 / Apr 26	Chip-Multiprocessor and Multicore Architecture	
10 / May 3	Data-Level Parallelism: Vectors and GPUs	
11 / May 10	Interconnection Networks	2 nd Quiz
12 / May 17	Data Center as a Computer	
13 / May 24	Design for Power and Energy Efficiency	
14 / May 31	Design for Dependability and Availability	
15 / Jun 7	Emerging Topics	
16 / Jun 14		Finals