



**University of
Nottingham**

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Introduction

Ying Weng

2023 Spring Semester
COMP1047 Systems & Architecture



Heng Yu (Module convenor)

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Ying Weng

Office: PMB-341

Office hour: Tuesday 14:00-16:00

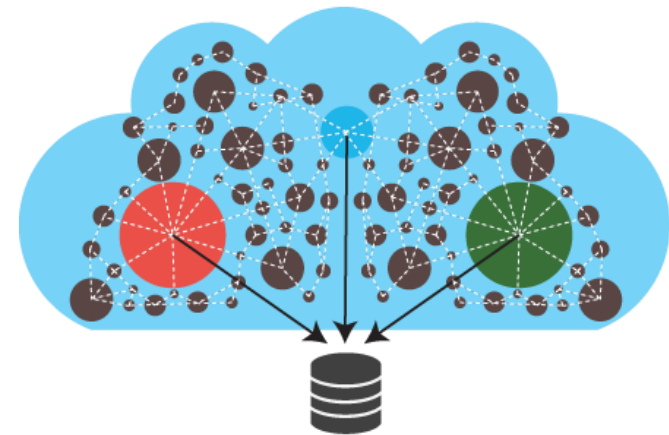
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- Lecture
 - Monday 14:00 – 16:00, DB-A05
 - Tuesday 13:00 – 14:00, DB-B05
- Lab
 - Group 1: Thursday 13:00-15:00, IAMET-406
 - Group 2: Thursday 15:00-17:00, IAMET-406
- For the 1st Teaching Week, there is no lab on Thursday 23rd February



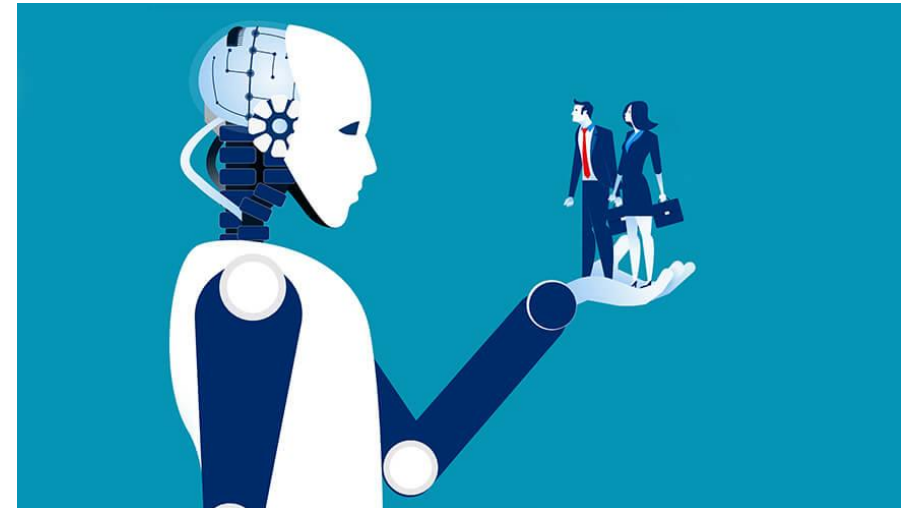
Recorded Videos for Lectures and Labs

- Video Camera Recording for all Lectures and Labs
- Recorded Videos will be uploaded to Panopto and Moodle





- Plan Ahead
- All material on Moodle
- Regular update





Lab Schedule

- Lab sessions will provide you hands on experiences on what you learned during the lecture sessions
- Lab materials will be published on Moodle





Lab Teaching Assistants (TAs)

Hejia Qiu

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Juntao Zhang

Email: juntao.zhang@nottingham.edu.cn

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- ❖ **MIPS assembly language**
- ❖ **Central Processing Unit (CPU)**
- ❖ **Networks**





❖ **Exam: 50%**

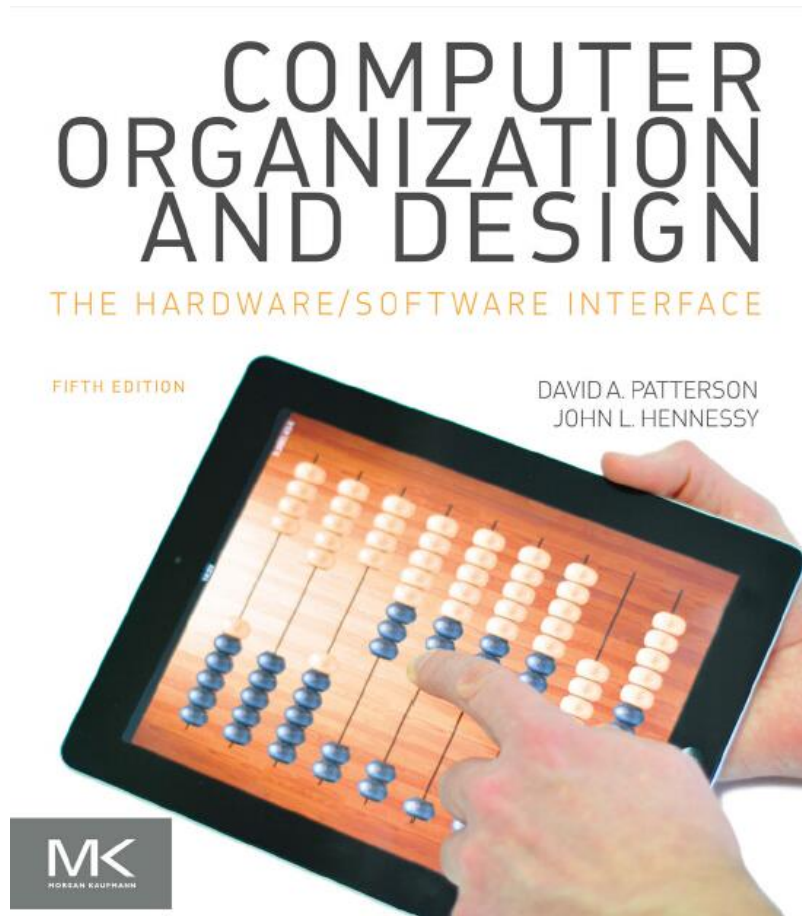
- 2 hour written exam

❖ **Coursework: 50%**

- 1 assignment

Any Questions





Main textbook:

- David Patterson and John Hennessy: *Computer Organisation and Design: The Hardware/Software Interface*, 5th Edition, Morgan Kaufmann

Other references:

- D. Harris and S. Harris: *Digital Design and Computer Architecture*, 2nd Edition, Morgan Kaufmann
- George Coulouris: *Distributed Systems: Organization and Design*, 5th Edition, Pearson Education Inc



- **Studying...**

- You are recommended to study the relevant notes before attending the lecture or lab.
- Review as soon as possible to maximize retention.

- **Practice...**

- **Do the lab exercise yourself** and repeat the practice for better learning.
- If you get help on the labs, don't just blindly accept it, but try to understand what each part of the code is doing.

- **Assignments...**

- Start work on the assignment **when they are released**, and come up with a good plan to finish it.
- It will take **longer** than you expect, so make sure you have plenty of time to complete.





Do the thing right, Do the right thing





Why Systems & Architecture?

```
/* C Hello World program */  
#include<stdio.h>  
  
int main()  
{  
    printf("Hello World!\n");  
    return 0;  
}
```

- Programming is about giving a computer instructions that we want it to perform
- What happens when we run 'Hello World!\n'?
- How does it make it appear on the screen?



Why Systems & Architecture? – Basics

- **Makes it possible to write computer programs**
 - Faster, smaller, less prone to errors
 - Understand the complexity of different computations, e.g. $2*3$ vs. $2.0*3.0$
- **Allows programmers to balance performance and relative cost of operations with appropriate programming choices**
- **Helps programmers debug**
 - Out of bounds array reference
 - Invalid pointer values
 - Is $(x + y) + z = x + (y + z)$?
- **Prepare for other CS courses, such as programming, compilers, operating systems, etc.**



Why Systems & Architecture? – Understand Performance

- **The performance of a program** depends on a combination of the effectiveness of hardware or software components
- **Algorithm**
 - Determines the number of I/O operations executed
- **Programming language, compiler, architecture**
 - Determine number of machine instructions executed per operation
- **Processor and memory system**
 - Determine how fast instructions can be executed
- **I/O system (including OS)**
 - Determines how fast I/O operations may be executed



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Stay Tuned.