



香港中文大學
The Chinese University of Hong Kong

CENG4480

Lecture 01: Introduction

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Overview

Important Notes

Grading System

Course Overview



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Important Notes

- ▶ Be **PUNCTUAL** to class
- ▶ Keep **QUIET** during class, unless
 - ▶ you are raising questions to teachers or tutors
 - ▶ during in-class activities
- ▶ **DON'T OVER-ENGAGE** in extra-curricular activities or part-time jobs



Academic Honesty

Zero Tolerance

- ▶ Plagiarism, cheating, misconduct in test/exam will be reported to the Faculty Disciplinary Committee for handling.

Penalty

- ▶ **Zero** marks for the concerned assignments/test/exam/whole course, reviewable demerits, non-reviewable demerits, suspension of study, dismissal from University.

University Guidelines to Academic Honesty

- ▶ <http://www.cuhk.edu.hk/policy/academichonesty/>



Student/Faculty Expectations

- ▶ Let's join hands to create a **positive**, **respectful**, and **engaged** academic environment inside and outside classroom.
- ▶ Full version of Student/Faculty Expectations on Teaching and Learning
- ▶ <http://www.erg.cuhk.edu.hk/upload/StaffStudentExpectations.pdf>



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Grading System

- ▶ Class Attendance (5 marks)
- ▶ Homeworks (15 marks)
- ▶ 9 Labs (20 marks)
- ▶ Midterm Exam (20 marks)
- ▶ Final Exam (40 marks)
- ▶ (Optional) Final Project (10 marks)

A student must gain at least 50 marks in order to pass the course.



Grading System – Tips

- ▶ Individual lab (academic honesty!)
- ▶ About Absence in mid-term
- ▶ Class attendance: in-class quiz
Ex: http://www.cse.cuhk.edu.hk/~byu/doc/quiz_example.pdf
- ▶ Lecture review
- ▶ Bonus question
- ▶ Please read your marks from Blackboard (<https://blackboard.cuhk.edu.hk>)



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Overview – Part A



How to build up a Robot?



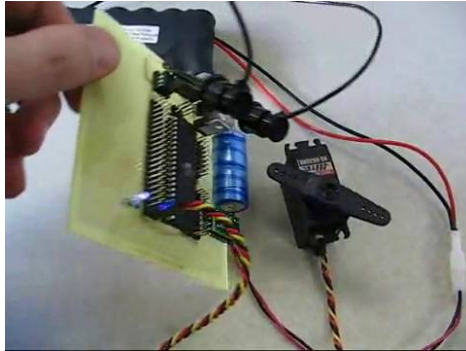
Overview – Part A

A1 Sensors

- ▶ Use of different sensors and their characteristics

A2 Op Amps and Analog Interfacing

- ▶ How to connect sensors to systems



Sensor demo (<http://www.youtube.com/watch?v=9NEiBDBXFEQ>)



Overview – Part A

A3 Analog-to-digital conversions ADDA

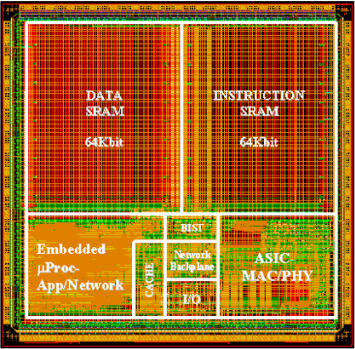
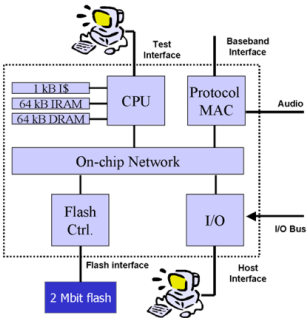
- ▶ Internal operations of different ADDA devices

A4 PID controller

- ▶ feedback control of motors



Overview – Part B



How to design an IP Core?



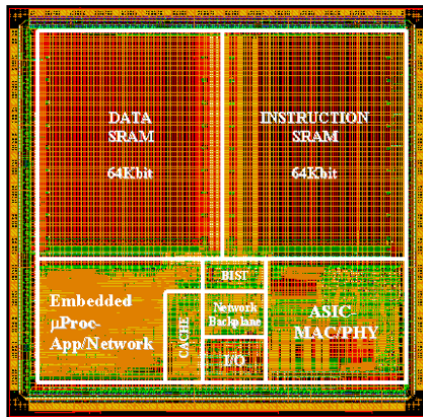
Overview – Part B

B1 PCB

B2 Clock

B3 Memory

B4 Design Style



Overview – Project Demos

- ▶ **Demo 1: Self-Balancing Robot**
<https://youtu.be/dQWATsLa30g>
- ▶ **Demo 2: Robot Car w. Color Sensor**
<https://youtu.be/PKCPdWjZCqY>
- ▶ **Demo 3: Robot Hand**
<https://youtu.be/ai94rHHuaXc>
- ▶ **Demo 4: Robot**
<https://youtu.be/1D0e7SS85Xc>

