



IA based Embedded Curriculum Sharing

Pin Tao

Tsinghua University

IA based Embedded Curriculum Summary

Course Name: **Embedded System**

Course Type: **both PPT & Hands-on**

Target Student/Semester: **Senior Students on Autumn Semester**

Student Number (per year): **about 150/year**

Course Duration: **16 weeks**

Prerequisite Courses: **Computer Organization, Operating System**

IA based Embedded Curriculum Characteristic

Curriculum/Course Characteristic:

1) System level education

- Teaching the students system level knowledge and giving them chance and supporting to practice it.

2) Increasing Education Resource

- Find and merge the contributions of every year increasingly to make the curriculum resource becoming more and more rich.

3) Open Curriculum

- Provide various lab platform to the students, let them take the lab platform back to dorm, design and absorb the new lab platform for the students.

IA based Embedded Curriculum Key Points

Curriculum/Course Key Points:

1) Integral

- Teaching the students to think, know and do the lab as an integral system, not an application level software design, not a bare hardware board, etc.

2) Interesting

- The lab design should stimulate the interesting of the students, not only a curriculum task for them.

3) Interface

- Keep the lab design has a small interface which make the students can understand it and accomplish it with the limit time.

IA based Embedded Curriculum Difficult Points

Curriculum/Course Difficult Points:

1) Connected

- How to connect the knowledge points in the lecture and the lab design, put the knowledge points of embedded system into the specific content in the labs.

2) Limited

- How to arrange the labs with the limited students' time, teachers' time, funds, TA number, lab room space, hardware resource, etc.

3) Interested

- How to stimulate the interesting of the students to make them be happy to challenge the possible difficulties in the lab design stage.

IA based Embedded Curriculum Experience Sharing

Embedded IA is better than other embedded platform for university education, because:

- 1) Rich supports for various OS, including commercial OS and open source OS.
- 2) Rich resource of open source software on Internet without porting difficulties.
- 3) Rich hardware components in the market for enhance the functionality of the lab design, e.g. usb camear, 3G usb stick.
- 4) High performance computation resource which makes the student and teacher and design the smart embedded system lab without the hard work on optimization.

IA based Embedded Curriculum Hands-on Practice Case Sharing (1)

Case Name: Atom + MeeGo + 3G

Case Attribution: System Level Design, Embedded OS, USB Device, Wireless Communication

Case Objective: Design a 3G communication platform

Case Content:

Lab Report: "MeeGo_3G_report.pdf"



MeeGo_3G_report.pdf

IA based Embedded Curriculum Hands-on Practice Case Sharing (2)

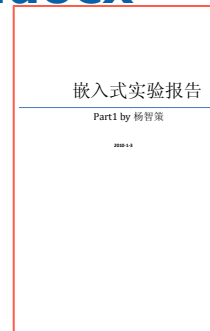
Case Name: Various OSs on Atom

Case Attribution: System Level Design, Embedded OS, System Software porting

Case Objective: provide the frequently used OS on Atom platform

Case Content:

Lab Report: "Various OSs on Atom.docx"



IA based Embedded Curriculum Hands-on Practice Case Sharing (3)

Case Name: OpenCV optimization

Case Attribution: Embedded towards Design, System level middleware optimization

Case Objective: Design the smart application based on embedded OpenCV library, smaller, portable and faster.

Case Content:

Lab Report: "OpenCV.pdf"



IA based Embedded Curriculum Resource

<http://embed.cs.tsinghua.edu.cn>

<http://embed.cs.tsinghua.edu.cn/videos.html>

http://v.youku.com/v_show/id_XMjc1NjIyMTQ0.html

http://v.youku.com/v_show/id_XMjc1NjIxNzQ4.html

http://v.youku.com/v_show/id_XMjc1NjIyMzI4.html

Thank You!