

Individual Study on Embedded Systems Area



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Suggested projects in 2009 – Virtualization techniques for VLIW processors and multi-core MPU processors

- Design and implementation for virtual devices:
 - Examples are USB, network device, storage, and memory.
- The target issues include the tradeoff between efficiency and criticality.
- You will learn in this project:
 - Real-time scheduling theory
 - Real-time resource sharing and resource management
 - Kernel implementation

Suggested projects in 2009 – Cross-layer Android system optimization for multi-core embedded systems

- Study the cross layer interaction among embedded hardware, Linux kernel, Dalvik virtual machines, and Android applications.
- The target issues include dynamic applications and devices parameter adjustment.
- You will learn in this project:
 - Characteristics of mobile applications
 - Resource management for mobile devices.
 - How to put the next generation wireless radio protocol on chip including WiMAX.
 - (You will play with latest mobile phone.)

Suggested projects in 2009 – Flexible multi-user medication dispensing systems

- Two possible topics:
 - Test the intelligent nurse carts for NTUH.
 - Design and implement the medication dispensing system.
- The target issues include
 - System integration and test for large scale software systems.
 - Safety interlock mechanism using electronic and mechanical devices.
- You will learn in this project:
 - Industrial-level quality code development and software quality control.
 - Knowledge for medication use and medical treatment.
 - Reliable embedded software design.

How it works

- You will work with me and graduate students.
 - Weekly meeting is required to check your progress and provide you the advices.
- You are encouraged to work as a team.
- Expected results:
 - Finish a work report at the end of each semester. The year-end report should meet the quality of domestic conferences.
 - Submit your project to Embedded Software competition 2010.
 - First Prize: travel package for international conference.
 - Estimated schedule
 - Registered in March 2010
 - Final in May 2010