Integrated Information System Design

2 units (selection)

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Target〉 The aim of this lecture is to master the modern design technologies of very large scale integrated circuits.

Outline〉 Very large scale integrated circuit (V-LSI) design and production method. Using CAD technology, VLSI logic design, testing and fabrication are explained. Design of high-speed algorithm and parallel distributed processing system. Neural network and genetic algorithm for integrated circuit design.

Style〉 Lecture and excercise

Requirement〉 It is necessary to get the unit of the mos integrated circuits in master cource.

Notice〉 In order to get the unit of this lecture, the grduate cource students should have learned the-state-of-the-art of the modern hardware technology, especially C-MOS integrated circuits.

Goal〉 This lecture is desighned to provide engineers and scientists with an introduction to the fieled of VLSI neurocomputing.

Schedule〉

1. Embedded software architecture
2. Real-time schedure method
3. System description language
4. Application specific integrated circuits
5. Power consumption and speed of very large scale integrated circuits
6. Shared memory and communication mrthod
7. Cash memory and main memory
8. System modeling and documentation
9. Partitioning and performance
10. deta flow graph and finite state machine
11. Behavior description language and Spec C
12. Control deta-flow graph and function synthesis
13. Neural computing board diagram using EEPROM-style programmable synapses
14. Layout patern example
15. Gate-sizing wiring and timing driven
16. Boundary scan and delay estimation

Evaluation Criteria〉 Unit evaluation contains test and design of VLSI

Textbook〉 Hardware Annealing in Analog VLSI Neurocomputing, Kluer Academic Publishers

Reference〉 Electronics Circuits, written by Norio Akamatsu

Webpage〉 http://titan.is.tokushima-u.ac.jp/~fukumi

Contents〉 http://cms.db.tokushima-u.ac.jp/cgi-bin/toURL?EID=216699

Student〉 Able to be taken by student of other department and faculty

Contact〉

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Note〉 Lecturer will show the schedule of this lecture and design technologies.