

Fri March 5

Overview of the Scalable Video Coding Extension of the H.264/AVC Standard

1. What are the three different types of scalabilities used in scalable video coding and briefly describe each?
2. Why is scalable video coding useful?

Video Coding for Streaming Media Delivery on the Internet

3. Can live streaming or on-demand streaming handle a more complex encoding algorithm and why?

Wed March 17

Comparing three heuristic search methods for functional partitioning

4. Compared to hill-climbing, what is the advantage of simulated annealing in searching for the best solution?

Warp Processor

5. CAD applications usually require a desktop computer with many resources and require significant runtime. However, a Warp Processor performs CAD on-chip. Describe what methods enable this.
6. What is decompilation? Why is it critical to Warp Processing?

Friday March 19

System Level Hardware/Software Partitioning Based on Simulated Annealing and Tabu Search

7. Name five challenges involved with HW/SW partitioning?
8. What is the main advantage of Tabu search as compared to Simulated Annealing?

Software / Hardware Partitioning Techniques

9. How does SHaPES determine whether a particular task should get implemented in software or hardware?

Monday March 22

Comparative analysis of High Level Programming for Reconfigurable Computers: Methodology and Empirical Study

10. What are the benefits of using a high-level language for RC system?

Wed March 24

HW/SW partitioning of floating point software applications to fixed-pointed coprocessor circuits

11. Describe the method used to implement floating point applications in embedded systems?

Automatic Fingerprint Recognition System

12. How are the tasks involved with a fingerprint recognition system divided into hardware and software phases? Be specific with respect to the fingerprint application.

Dynamic Hardware Software Partitioning

13. What are three advantages of using dynamic hardware software partitioning compared to the static approaches?

Mon March 29

A self-tuning cache architecture for embedded systems

14. Why are configurable caches advantageous in embedded systems?
15. List three drawbacks in using simulation to determine the best cache in cache configuration?

Program Phase Directed Dynamic Cache Way Reconfiguration for Power Efficiency

16. What is the tradeoff between the vector distance threshold and the number of clusters?

Wed March 31

Cache optimization for an embedded MPEG-4 video decoder

17. What are the challenges involved with MPEG-4 decoders?

Challenges In Embedded Memory Design And Test

18. List five advantages of using on-chip embedded memory for an SoC.
19. List five disadvantages of using on-chip embedded memory as compared to off-chip memory for an SoC.

Friday April 2

Cache Optimization for Real Time MPEG-4 ENCODER

20. What are the two types of redundancy that are exploited by video encoders to achieve high compression?
21. What is a DMA and discuss the benefits of using a DMA.

Design Space Optimization of Embedded Memory Systems via Data Remapping

22. What are three advantages of using compile time data remapping?

Monday April 5

Execution Context Optimization for Disk Energy

23. What is the disadvantage of Uni-Programming ?

Exploiting Java Through Binary Translation for Low Power Embedded Reconfigurable Systems

24. Describe the binary translation process and discuss its advantages.
25. Why do the fine-grained reconfigurable architectures have higher power dissipation when compared to the coarse-grained architectures?

Wed April 7

Using Simulated Partial Dynamic Run-Time Reconfiguration to Share Embedded FPGA Compute and Power Resources across a Swarm of Unpiloted Airborne Vehicles

26. Name two reasons why it is advantageous for tasks to move between the members of a micro air vehicle swarm.

Low-Power Color TFT LCD Display for Hand-Held Embedded Systems

27. Name and describe all four techniques used to reduce power consumption for TFT LCDs in Hand-held Embedded Systems?

Friday April 9

Memory Access optimizations in Instruction-Set Simulators

28. List the two types of Simulators. Also provide difference between the two.

Scratchpad Memory: A Design Alternative for Cache On-chip Memory in Embedded Systems

29. List three differences between scratch pad memory and cache

Cache Optimization for Mobile Devices running Multimedia Applications

30. What are the 3 types of frames used in MPEG-4 and describe each.

Monday, April 12

Architectural and Physical Design Optimization for Efficient Intra-Tile Communication

31. What are the purposes of the data plane and control plane in a communication architecture in SoCs?

Memory Hierarchies, Pipelines, and Buses for Future Architectures in Time-Critical Embedded Systems

32. What is a timing accident and give three examples.

Friday April 16

Towards a Self-Reconfigurable Embedded Processor Architecture

33. List 3 acceleration techniques employed by Xtensa processor core and describe each of them
34. Why is profiling important for runtime reconfiguration?

The Imagine Stream Processor

35. What techniques does Imagine use to exploit parallelism in media-processing application and why are these techniques appropriate for media processing?