9/27/11

Trickle: A Self-Regulating Algorithm for Code Propagation and Maintenance in Wireless Sensor Networks

1. List some of the challenges in designing a code propagation algorithm for DSNs
2. List 2 reasons why code propagation is helpful in sensor networks

A Key-Management Scheme for Distributed Sensor Networks

3. How can nodes in a DSN be physically protected against tampering
4. Why is key management and security difficult in DSNs?

9/29/11

Considerations on Security in ZigBee Networks

5. What is the primary "Forward Security" problem that the authors address in the paper with respect to Security Keys?
6. For the above problem, what is the authors' proposed solution?

An Investigation on IEEE 802.15.4 MAC Layer Attacks

7. Most attacks presented in this paper work through jamming or other interference based methods, what is the term for these kinds of attacks?

ARM presentation:

8. ARM cores focus on low power operation. List several special architectural features that the cores use to provide low power operation.
9. Since ARM provides processor core IP and not physical devices, how does this distribution method affect the flexibility of the devices that ARM cores can be used in.

10/6/11

Computers Watching Tsunamis: DEEP-OCEAN ASSESSMENT AND REPORTING (DART II)

10. The total battery capacity of the tsunameter is 3560 watt-hours while the total capacity of the buoy is 4430 watt-hours; yet the tsunameter batteries need to be changed every 4 years while the buoy is only good for 2 years. Why?

Attacks and Defenses of Wireless Sensor Networks

11. What are the 3 main things computer and network security aim to provide?
12. How can we route traffic in an energy-efficient way by reducing each nodes transmit power levels?
13. Define denial-of-service and denial-of-sleep, pointing out why denial-of-sleep is an important security issue for embedded systems.

10/11/11

Context-Aware Wireless Sensor Networks for Assisted Living and Residential Monitoring

14. What is a key challenge in designing any heterogeneous system and how does AlarmNet tackle?
15. What is the challenge faced by SenQ in requesting sensor data semantically for people and locations? How does it overcome the challenge?

Flooding Time Synchronization Protocol:

16. How does the flooding time synchronization protocol deal with clock drift between clock synchronization protocol periods?
17. List some of the uncertainties in wireless communications that make time-synchronization difficult for distributed sensor networks?

10/13/11

A Distributed Routing Algorithm for Datagram Traffic in LEO Satellite Networks:

18. Why is routing packets in satellite constellations difficult?
19. Why are inter-satellite (east/west) links shut down in the polar regions?

FlexRay papers:
Performance Analysis of FlexRay-based ECU Networks; FlexRay Schedule Optimization of the Static Segment

20. List three benefits of FlexRay compared to CAN (Controller Area NetWorks)
21. Why is it more difficult to simulate the dynamic segment portion of FlexRay?
22. List 2 key features that differentiate the static segment and dynamic segment in FlexRay.

ICAP Controller for high-reliable internal scrubbing

23. Why are single event upsets (SEUs) worse for FPGAs than for ASICs?
24. What is TMR and how does it improve reliability?

10/18/11

CubeSat Design for LEO-Based Earth Science Missions

25. What is a tether with relation to CubeSat's and what is the tether used for?
26. Explain the motivation for the CubeSat standard. What is their target audience?

A CubeSat Design to Validate the Virtex-5 FPGA for Spaceborne Image Processing

27. What kind of Attitude Determination and Control System does the M-cubed use? List one advantage and one disadvantage for this method.
28. Name one kind of fault induced by radiation in FPGAs?

10/20/11

Designing VM Schedulers for Embedded Real-Time Applications

29. How do Virtual Machines (VMs) protect applications from each other?

A Robust Real-time Embedded Vision System on an Unmanned Rotorcraft for Ground Target Following

30. In the target-following unmanned rotorcraft, when the digitized data is outputted from the frame grabber, it is fed into the vision computer. The vision computer then uses this data to control what 2 aspects of the UAV?
31. Name 3 ways researchers enable target tracking in low power embedded systems?

A Real-time Non-intrusive FPGA-based Drowsiness Detection System

32. What are the main reasons for using an FPGA for the drowsiness monitoring system instead of an ASIC of DSP?
33. List two advantages and two disadvantages for using an Infrared CCD Camera for the drowsiness monitoring system

A Generalized Framework for System-Wide Energy Savings in Hard Real-Time Embedded Systems

34. What are two of the three power saving methods employed in the DEPS framework for power savings in embedded systems?

10/25/11

Home Automation Networks

35. Name one advantage and one disadvantage of using powerline based networking over wireless based networking protocols.

10/27/11

An Adaptive Fault-Tolerant Memory System for FPGA-based Architectures in the Space Environment

36. Name one benefit of reconfigurable computing in space?
37. Name one way radiation can cause problems for electronics in space?

Reconfigurable Computing

38. Why does is the CGRA mentioned in the paper more suitable for DSP applications than an FPGA?
39. Kernels are the computation intensive or critical portions of the program. How does the profiling procedure define "intensive" or "critical" portions? In other words, what separates the critical from the non-critical portion?
40. Why is optical flow challenging to implement in embedded systems?
41. What device is necessary for real-time embedded optical flow? Why?
42. Why are FPGAs ideal for many image processing tasks?