Reading Group on: Reliable and Secure System Design

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Outline

- Introduction of participants
- Topics to be covered
- Presentation on individual research
- Scheduling

Topics to be Covered

- Case studies of intrusion detection systems
  - Theoretical work, e.g., by Wenke Lee
  - Practical work, e.g., the Prelude IDS
- Case studies of fault tolerant computer systems
  - E.g., Tandem's Integrity machine, TNET – a reliable system area network
- Error detection techniques
  - Control flow error detection
  - Watchdog processors
  - Hardware redundancy

Topics to be Covered

- Recovery techniques
  - Rollback recovery using checkpoints
  - Rollback recovery in message passing multiprocessors
  - Forward recovery
- Software reliability
  - How often does software fail?
  - Why does software fail? (And from that maybe, what can be done about it?)
- Estimation of reliability
  - Reliability modeling, e.g., using combinatorial models
  - Availability modeling, e.g., using Markov models

General Structure of each Presentation

- For the presenter
  - Motivation + Problem Statement
  - Solution Approach
  - Assumptions behind solution
  - Application of solution to a problem
  - What is the related work in the field
  - Applicability of the solution to your research area and possible extensions
- For the review: Did the presenter –
  - Give the main ideas
  - Explain the shortcomings
  - Give a smooth and well-organized talk

Research Presentation

- There will be some presentations on your individual research work
- The time is right when you have results enough to write up in a paper
- Difference from presentation of others' papers
  - Emphasize on the details of the solution technique
  - Possibly a demo of the system
- Some candidates for this presentation early on
  - Network characteristics for mobile ad-hoc networks
  - Intrusion detection and response through a hierarchical approach