Misc

- □ Last HW on web. Will post solutions next Mon. Not due but responsible for material.
- □ Extra Office hours (beyond today's):
 - o David: Thurs. 2-3, Room 258 Cory
 - o Abhay: next Tues, 11-12, Room 258 Cory
 - Nikhil, Marghoob: regular office hours
- □ Final Exam: May 17, 5-8pm, 50 Birge Hall

Error Detection and Correction

datagram

datagram

validation

Discreption

Discre

The Layers

- Application
- □ Transport
- □ Network
- □ Link
- □ Physical (Wireless)

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Key conepts of parity-check codes

- ☐ How to calculate data rate of a code?
- What is the difference between error detection and error correction?
- □ What is the minimum Hamming distance of a code?
- □ How to relate this to the error detection and correction capabilities of a code?
- □ What does " correcting burst errors" mean?
- How does CRC work and how long a burst can it correct?

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Link Layer Main concepts: Error correction and Detection Multiple access Protocols Addressing (MAC vs IP) Ethernet architectures (hub vs switch)

<u>Multiple Access Protocols</u>

- What are the different types of MAC protocols?
- □ What types of traffic is each suitable for?



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Random Access Protocols: Key Concepts

- □ random backoff
- channel sensing
- collision detection
- collision avoidance:
 - o random backoff on sensing busy channel
 - o reservation (RTS/CTS)

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Wireless Networks

- Physical layer: multipath fading and impact on reliable transmission.
- □ MAC layer: multiple access and interference management
- Mobility management

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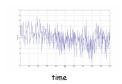
Aloha and CSMA

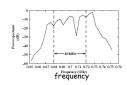
- What does efficiency of a MAC protocol mean?
- How to compute the efficiency of Aloha and CSMA protocols?
- How should the retransmission probability be adjusted as a function of system load?
- ☐ How is this actually done in Ethernet?
- What is the impact of propagation delay on efficiency?

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Multipath Fading

Why does the wireless channel behave like this?





What is the main idea for reliable communication over this unreliable medium?

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Timing Diagrams space C C Collision detect/abort time

<u>Multiple Access and Interference</u> Management

Key concepts:

- □ Universal vs fractional frequency reuse
- ☐ GSM vs CDMA
- □ Hidden terminal problem and impact on CSMA protocol in 802.11 networks.

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Mobility Management

- □ Home network vs visited network
- □ Home address vs care-of-address
- □ Indirect vs direct routing
- □ Soft vs hard handoff

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