Recitation 7 — Ethernet

Relation to Lecture

- Ethernet is a means of getting point-to-point links to work

Title of the Paper

- Computer network: a means for two or more computers to exchange messages
- *Local* computer network: physically close together. In contrast to a "wide-area" network.
- Packet switching: A packet-switched network sends *packets* (data + header). Better for bursty traffic, and most network traffic is burst
- Distributed switching: Endpoints make local decisions

Coordinating Sending

- Need coordination; otherwise multiple senders transmit at once, and packets collide and are lost
- **Carrier detection:** Don't send when another sender is sending. Can still have collisions (e.g., two senders start at the very same time), but fewer.
- **Interference detection:** When a sender detects that a collision has occurred, stop sending immediately (lessens the impact of the collision)
    - Need a minimum packet size in order for this to work, to guarantee that a collision will be detected by both endpoints
- **Retransmission backoff:** On a collision, wait a random delay before trying again; if another collision, choose a random delay from an interval twice as large; keep doubling the interval until the packet goes through successfully.
    - *After 3/7/2022: Compare/contrast this with TCP's congestion control mechanism!*

Futures

- The Ethernet described in the paper is not the Ethernet of today. Today's Ethernet is much faster (100,000x faster), for one. But the idea of a broadcast medium and random backoff still exist.