CSCI/ECEN 5673: Distributed Systems
Spring 2020
Course Content

- Introduction
- Event Ordering
  - Happened before relation
  - Logical clocks
  - Vector clocks
- Clock Synchronization
  - Clock drift and clock skew
  - Network Time Protocol
- Message Ordering
  - FIFO order
  - Causal order
  - Total order
- Global State
  - Consistent global state
  - Recording consistent global state
  - Distributed cut
- Consensus
  - Asynchronous, failure models and distributed consensus
  - Replicated state machines
  - Paxos
  - Raft
- Virtual Machines and Cloud Computing
  - Full virtualization vs para-virtualization
  - SaaS, IaaS and Paas
  - Google File System
  - Map Reduce and Hadoop
  - Pregel, Dryad, Spark, Storm
- Peer to Peer Systems
  - Napster, Gnutella, KaZaA, Skype
  - Bit Torrent, Freenet
  - Distributed Hash Tables: CAN, Chord, Kademlia, Pastry, Tapestry
- Large Scale Distributed Storage
  - Big Table
  - Dynamo
  - SPANStore
  - Facebook's Warm BLOB Storage System
- Remote Procedure Calls
- Gossip
- Content Distribution Networks
- Volunteer Computing
- Current Research Topics