

## **Project Topics for Distributed Computing**

**One-page proposal due:** Feb. 13 (penalty for late submission: 5% of project grade).

**30-minute presentation:** Mid and late-April.

**Final project due:** May 6 for all students (penalty for late submission: 5%).

1. (Scalability metric)

Amdahl's law and Gustafson law, time-constrained, efficiency-constrained, and memory-constrained scaling.

2. (Parallel/distributed environment)

MPI and PVM.

3. (Parallel/distributed system model)

including criteria to access their suitability.

4. (Networks of workstations)

with applications.

5. (Distributed simulation)

Petri nets and other related models.

6. (Mobile computing)

routing, checkpointing, and channel allocation.

7. (Information model)

switch-based LANS and internet.

8. (Routing)

Optimal, fault tolerant, and deadlock-free.

9. (Scheduling)

static and dynamic load distribution.

10. (Fault tolerance)

various applications.

11. (Scalable design)

interconnection networks.

12. (Survey)

Database, file, DSM, heterogeneous computing, OS, cloud, etc.

13. (Collective communication)

multicast, broadcast, barrier sync., etc.

14. (RPC and remote message passing) different approaches.

15. (Consistency models and applications)

different weak consistency models.

16. (Peer-to-peer networks)

routing, lookup problems, and peer-to-peer applications.

17. (Social networks)

structural model: small-world and applications

18. (Cloud computing)

Hadoop and Spark on clusters.

19. (Crowdsourcing)

foundation and applications.

20. (Virtual currency)

bitcoin and blockchain.

21. (Blockchain-based decentralized marketplaces)

Ethereum, Lazzoz, OpenBazaar, etc