

## Suggested papers for final project

### Communication and information complexity:

- [Deterministic Communication vs. Partition Number](#): proves a near-optimal lower bound for Clique vs. Independent Set and shows that the exponent in the log-rank conjecture is at least 2.
- [On the communication complexity of sparse set disjointness and exists-equal problems](#): studies the round complexity of sparse set disjointness and another problem and shows a round/communication tradeoff.
- [Certifying Equality with Limited Interaction](#) : round complexity of equality
- [Everywhere-tight information cost trade-offs for augmented index](#) : tradeoff between the number of bits Alice and Bob need to send in a one-way protocol for augmented index
- [Beating the Direct Sum Theorem in Communication Complexity with Implications for Sketching](#) : a better direct sum theorem for simultaneous communication
- [Zero-Information Protocols and Unambiguity in Arthur-Merlin Communication](#) : a very interesting result showing that information complexity cannot be used to prove lower bounds on Arthur-Merlin communication
- [Approximate Nonnegative Rank Is Equivalent to the Smooth Rectangle Bound](#) : equivalence of two lower bound techniques
- [Direct sum fails for zero error average communication](#) : counter-example for direct sum in the zero-error regime

### Compression (possibility and impossibility results):

- [Simplified Separation of Information and Communication](#) : shows that communication cannot be compressed to better than  $2^{\text{information}}$  in the worst case
- [How to Compress Asymmetric Communication](#) : compression for the case where each party reveals a different amount of information
- [Internal Compression of Protocols to Entropy](#) : compression for a simple class of protocols

### Circuit lower bounds:

- [Separation of the Monotone NC Hierarchy](#): shows that monotone-NC  $\neq$  monotone-P via a very interesting communication complexity technique which has other applications as well.

### Data structure lower bounds:

- [Higher Lower Bounds for Near-Neighbor and Further Rich Problems](#)
- [Unifying the Landscape of Cell-Probe Lower Bounds](#)

Distributed computing lower bounds:

- [Distributed Verification and Hardness of Distributed Approximation](#): shows many distributed lower bounds using essentially one reduction (applied in various ways) from set disjointness
- [Networks Cannot Compute Their Own Diameter in Sublinear Time](#)
- [Communication Algorithms with Advice](#)

Property-testing lower bounds:

- [Property Testing Lower Bounds via Communication Complexity](#)

Streaming lower bounds:

- [On Parallelizing Streaming Algorithms](#)