Project Report

**Group Members:**

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**Implementation Details:**

For the Gossip algorithm, int our implementation, when a particular node receives a rumor 60 times, it stops transmitting the rumor. The convergence of the Gossip algorithm occurs when all the nodes in the network have heard the rumor. The algorithm is terminated after convergence and we measure time elapsed for the algorithm to converge.

For PushSum algorithm, in our implementation, we consider a node to have converged if the average estimate i.e s/w ratio does not change more than 10 -10 in three consecutive message receive rounds. rounds. The algorithm is terminated after one node converges in the network.

**Graphs plots : Convergence time(ms) vs Number of Nodes for different topologies**

**Gossip Algorithm:**

The above graph plots the convergence times in milliseconds vs number of nodes for different topologies.

**PushSum Algorithm:**

The above graphs plot the convergence times of push-sum algorithm vs number of nodes for different

topologies.

**Interesting Observations:**

1. The Line topology showed the maximum convergence times for the Gossip and Pushsum Algorithms. Since each node has a maximum of 2 neighbors in this topology, the propagation of the message is slower in the network in comparison to other topologies
2. Following the above intuition, the full topology should have the least convergence time because of the interconnection of each node to every other node in the network. From the results obtained, our assumption was correct.
3. Pushsum and Gossip algorithm similar ordering of the various topologies in their graphs. This must be due to the fact that both share an underlying similarity in sharing the message.