DOS Project 2 report

By:

Himavanth Boddu(32451847

Shubham Saoji(26364957)

Implementation details:

Information propagation is done in the following process in this program. Each actor is sent a message from main process which in turn is propagated to a random neighbor alond with the count. Once the node receives the message 10 times it stops it work. We terminate the algorithm after convergence is achieved and time is measured.

We​ ​terminate​ ​the​ ​algorithm​ ​after​ ​convergence​ ​and measure​ ​the​ ​time​ ​taken​ ​to​ ​run​ ​the​ ​algorithm.

For implementation of push sum logic , convergence was assumed to occur at ratio of sum by weight does not change more than 10^10 in 3 consecutive message rounds after which it is terminated after convergence of all nodes. Each actor selects a random actor and sends it sum/2 and weight/2 and changes its value by the same.

Below are the graphs for convergence time(in ms) vs number of nodes for gossip and push sum algorithm in normal scale.

Following are the graphs for convergence time vs number of nodes for gossip and push sum algorithm in logarithmic scale to obtain meaningful result.

**Observations:**

* Full performs best for low number of nodes in gossip.
* Line is the worst in gossip.
* Random 2D works best in push sum
* Honeycomb is worst for push sum . By using random honeycomb the perfoemance is improved since the neighbor numbers are increased
* Random topologies fair better than others as they converge quickly