

Gossip Simulator
COP5615 – Distributed Operating Systems

Submitted By

Sreenivasa Sai Bhasanth Lakkaraju – 41602287 – slakkaraju@ufl.edu

Meghana Voladri – 43614999 – mvoladri@ufl.edu

Gossip Simulator

The aim of this project is to determine the convergence of Gossip type algorithms using actors in Elixir. Here, we implemented 6 topologies for the network and 2 algorithms for computation. We made several observations with respect to each of them that are described in detail below.

Topologies

The following are the various topologies implemented and some of the observations related to them.

Full Network

Every actor is a neighbor of all other actors. That is, every actor can talk directly to any other actor. Full Network converges in most case and in low time due to high degree of connections.

Line

Actors are arranged in a line. Each actor has only 2 neighbors (one left and one right, unless you are the first or last actor). Line is the slowest of all topologies.

Random 2D Grid

Actors are randomly position at x, y coordinates on a [0- 1.0] x [0-1.0] square. Two actors are connected if they are within .1 distance to other actors.

3D Torus Grid

Actors form a 3D grid. The actors can only talk to the grid neighbors. And, the actors on outer surface are connected to other actors on opposite side, such that degree of each actor is 6. Fastest of all topologies due to high degree of each nodes, converges for most cases in lowest time.

Honeycomb

Actors are arranged in form of hexagons. Two actors are connected if they are connected to each other. Each actor has maximum degree 3.

Honeycomb with a random neighbor

Actors are arranged in form of hexagons (Similar to Honeycomb). The only difference is that every node has one extra connection to a random node in the entire network.

