## Project 2

### Vivek Goyal UFID : 8388-6402

### Nishant Varma UFID : 8593-9695

### Gossip Algorithm

All 4 topologies initially show the same behavior. Afterwards, line topology becomes increasingly slower as the number of actors or nodes increases. Imperfect 2D topology and Full network topology almost show same behavior until nodes increases beyond 10,000 where imperfect 2D becomes slower comparatively. 2D topology is similar to imperfect 2D and full network topologies except it is slightly slower. The line topology does not show enough values as there is a possibility that some nodes converge at one side of the line and nodes later on do not even receive the message to converge. From the observations, Full network topology is the fastest followed by imperfect 2D, 2D and line topology at last.
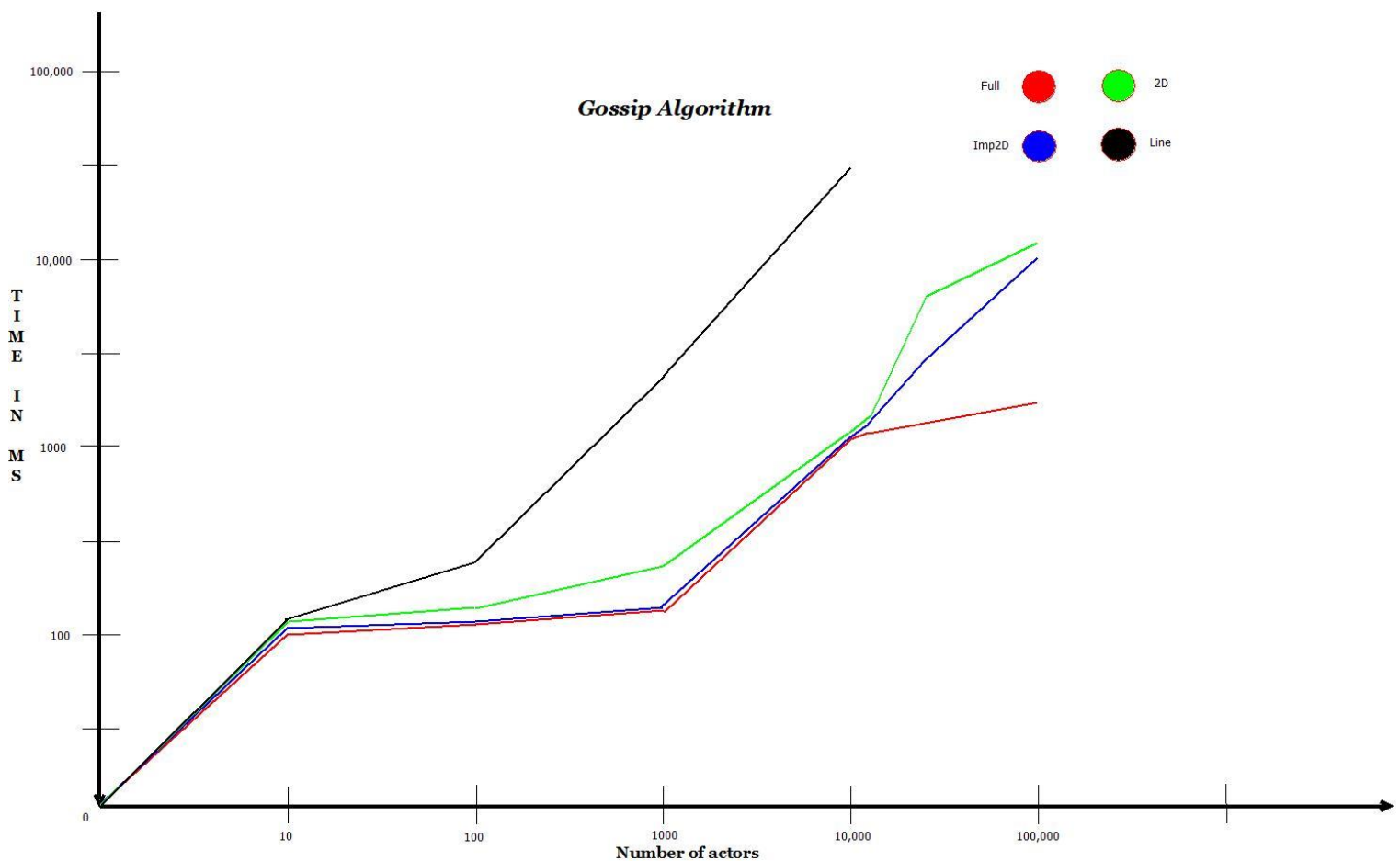
## Push-sum algorithm

Push sum algorithm is also similar initially for every topology but quickly differentiates as the number of nodes increases. Here, imperfect 2D is seen more or less as a uniform growth. The line topology once again does becomes increasingly difficult to converge as nodes increases due to the inability of the network to progress because of convergence at some locality on the line. In our implementation, S/W ratio for all the actors has a +/- 1 variance. In push-sum algorithm as well, Full network topology is the fastest, followed by imperfect 2D, 2D and finally line.