

The works in this week:

[1] The replication problem in p2p social network

We assume that each peer has an online probability, which can be recorded by peers themselves, and then broadcasted to their friends. Next, we should consider the strategy for users to decide which friends they should put their data on. One of the significant criteria is that the probability that they others can get their data is large enough. The problem can be described as:

$$\begin{aligned} \min & \sum_{i,j} x_{ij} \\ \text{s.t.} & \\ & \sum_j x_{ij} \cdot p_j > 1, \\ & \sum_i x_{ij} < L \end{aligned}$$

Where,  $x_{ij}$  means user  $i$  puts his data replication on user  $j$ , while  $L$  the limitation of storage space of a user. Considering the problem, we can propose the strategy as: First, we choose the friends with the highest online probability, and then check whether the total number of the strategy stored at this user is less than  $L$ . If yes, we put a replication on such user: otherwise, we drop it. Next, we choose the friends with the second highest online probability, and take the similar action as the first step. The steps go on until the constraint  $\sum_j x_{ij} \cdot p_j > 1$  is satisfied.

[2] Other papers studied:

1. Rongjiang Xiang, Jennifer Neville, Monica Rogati, "Modeling Relationship Strength in Online Social Networks", in WWW, 2010
2. Pan Hui, Kuang Xu, Victor O.K. Li, Jon Crowcroft, "Selfishness, Altruism and Message Spreading in Mobile Social Networks", in First IEEE International workshop on Network Science For Communication Networks, 2009