

The friendship paradox for social networks

Frank den Hollander
Leiden University, The Netherlands
denholla@math.leidenuniv.nl

ΠΕΡΙΛΗΨΗ

Consider a group of individuals who form a social network. For each individual in the group, compute the difference between the average number of friends of its friends and the number of its friends (all friendships are mutual), and average these numbers over all the individuals in the group. It turns out that the latter average is always non-negative, and is strictly positive as soon as not all individuals have exactly the same number of friends. This bias, which at first glance seems counterintuitive, goes under the name of friendship paradox, even though it is a hard fact.

In this talk we model the social network as a graph and explain where the bias comes from. For two examples of random graphs we show how the bias can be quantified. We briefly discuss variants where we look at groups of friends.

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