Analysis of Networks

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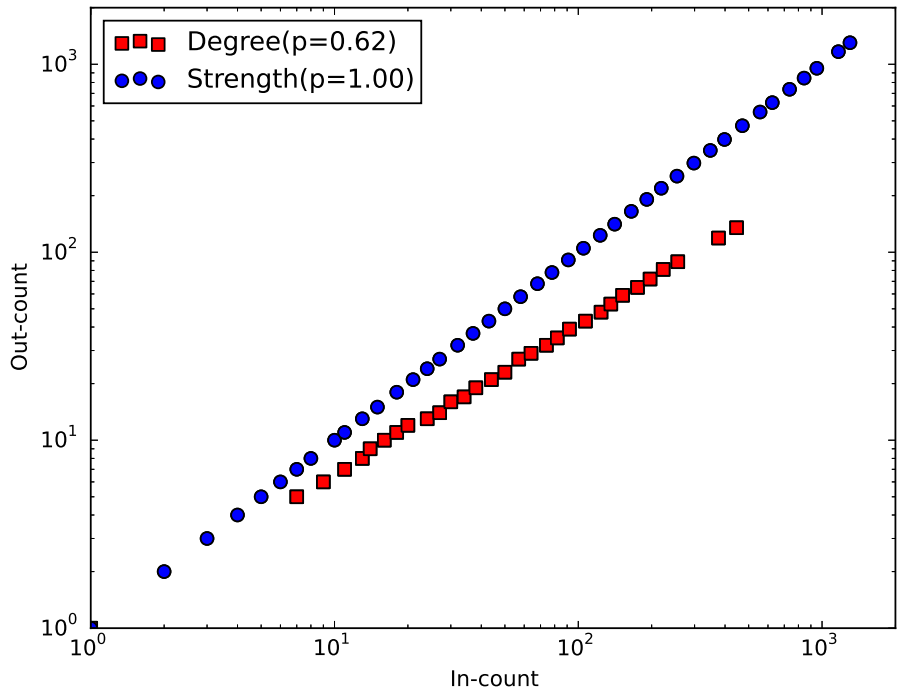
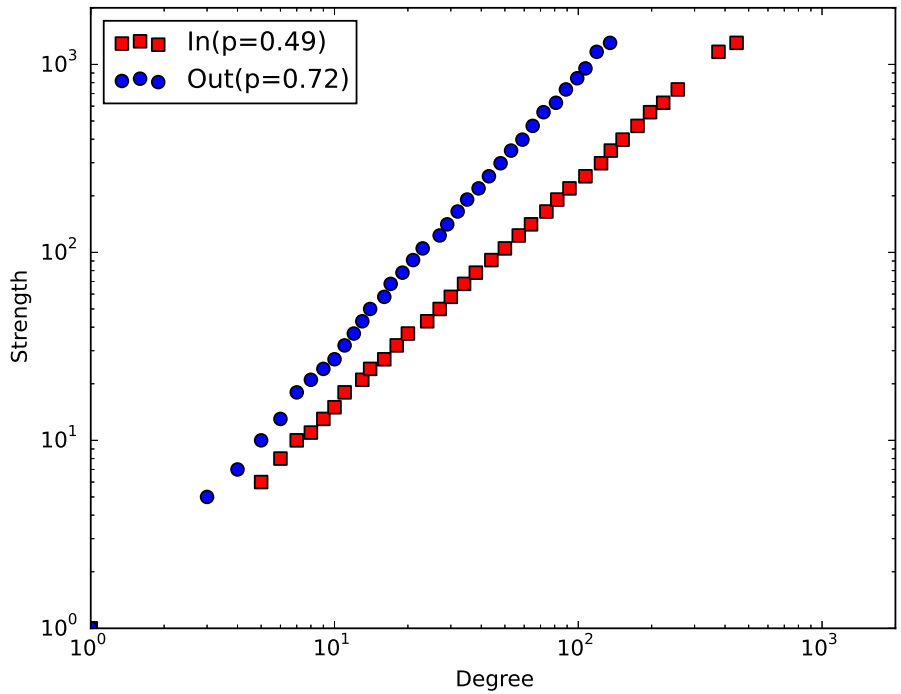
Correlation of In and Out in Di-Graph



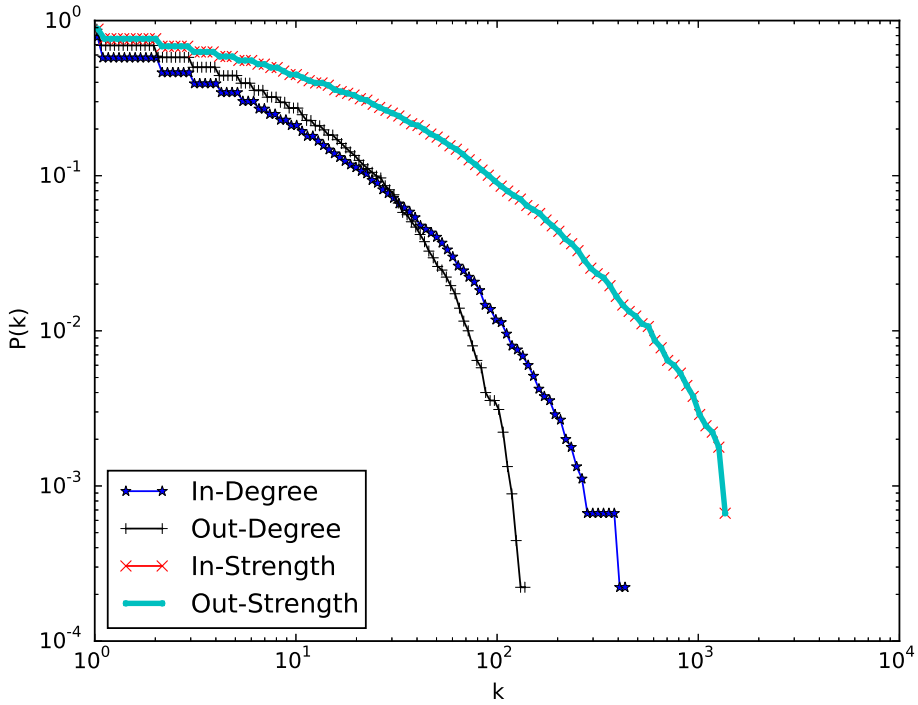
The Red points denote the correlation of in-degree and out-degree, and the Pearson correlation of in-degree and out-degree is 0.62. The blue points denote the correlation of in-strength (weights of link) and out-strength, and their Pearson correlation is 1.00, i.e., total positive correlation.

Correlation of Degree and Strength in Di-Graph



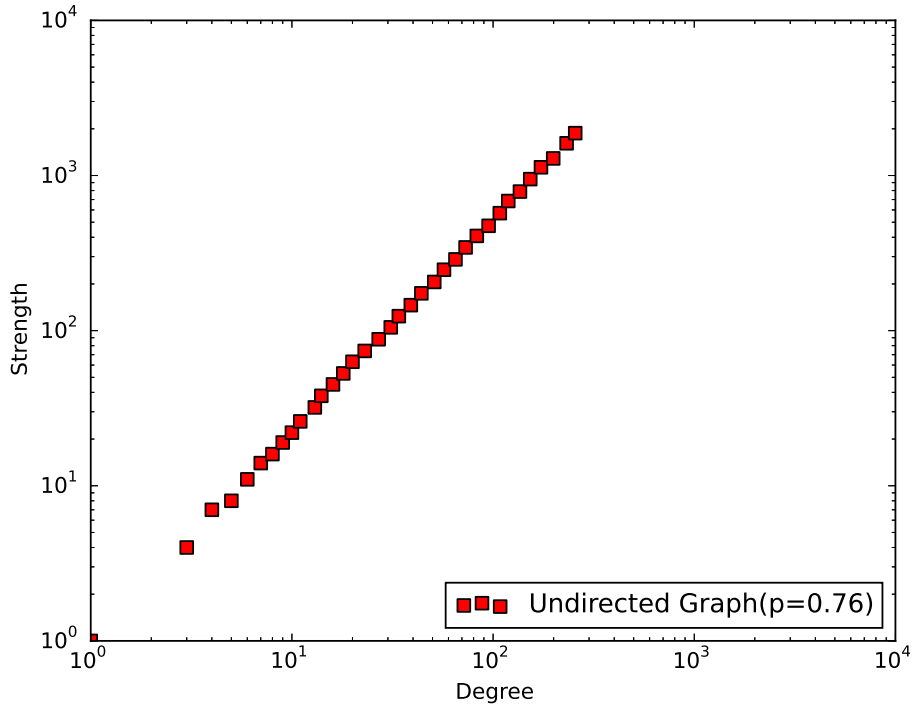
The out frequencies(both degree and strength) are generally larger than the in ones. This confirms that the average number of friends of our friends are more than the number of friends that we have. We always focus on others, but they less focus on us.

Cumulative Probability Distribution in Di-Graph



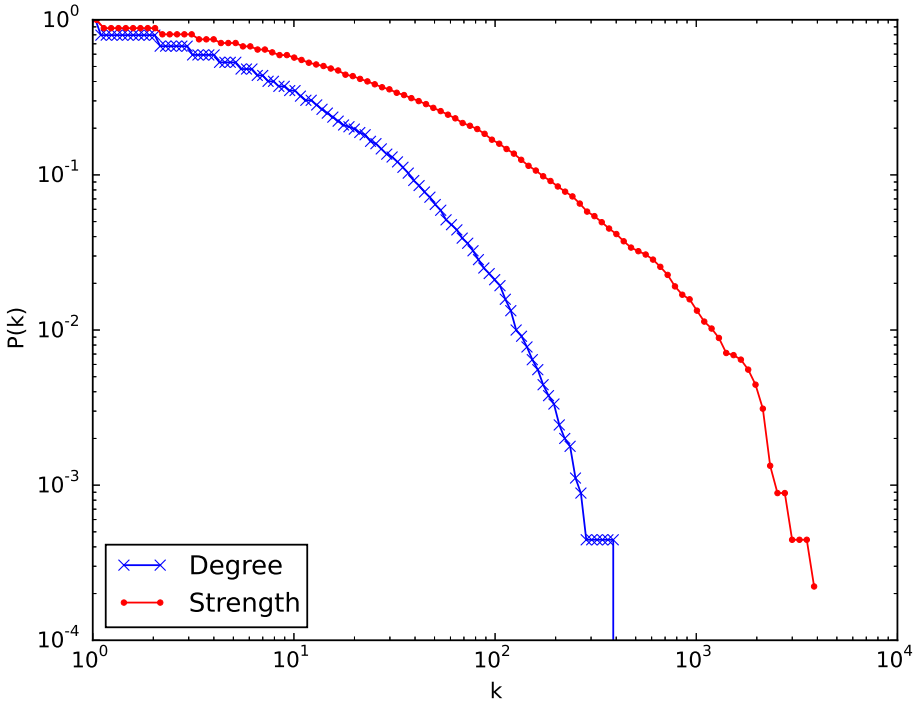
As the in-strength is positive correlative to out-strength, their probability distributions are identical.

Correlation of Degree and Strength in UnDi-Graph



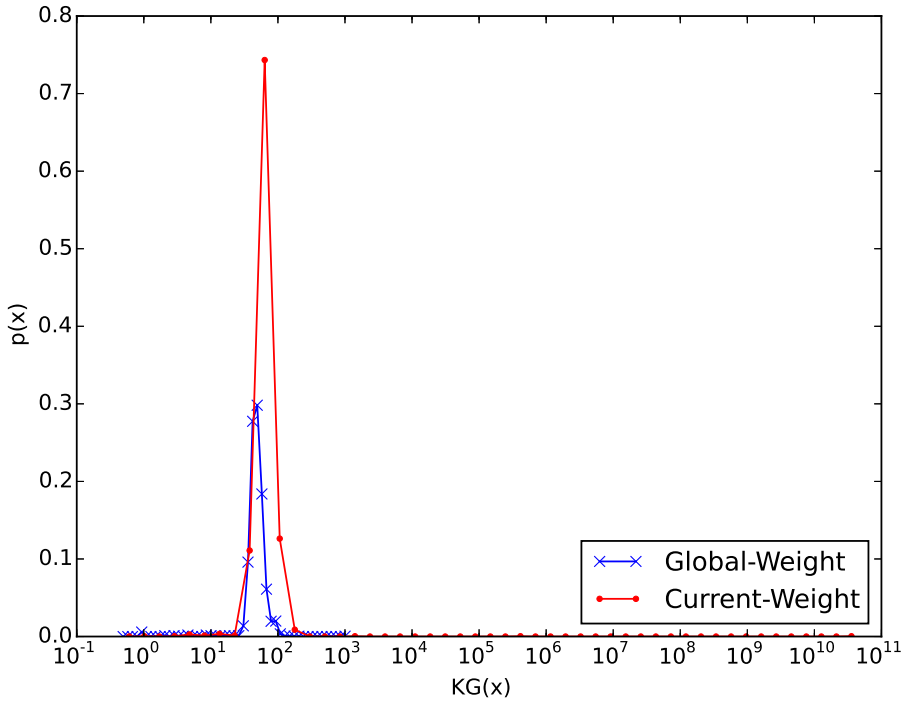
The Pearson correlation of degree and strength in undirected graph is higher than those in directed graph(both in and out).

Cumulative Probability Distribution in UnDi-Graph



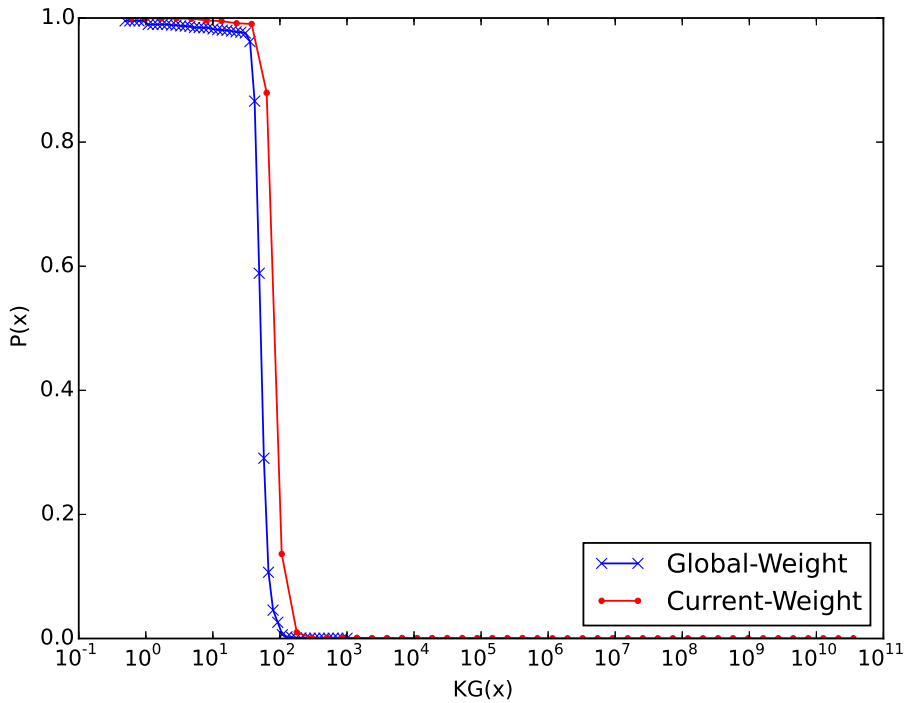
The tail of strength distribution is long than that of degree.

Probability Distribution of Weights



Filtering users that have both GW and CW records, we can get 2,606 users from POI.csv. The ranges of global weights and current weights are in $[0.0, 1082.724104]$ and $[0.453592, 44741859695.9]$.

Cumulative Probability Distribution of Weights



The distributions of global weights and current weights are much similar. However, the current weights are generally larger than global weights, which seems users are getting fat.

The End