All citations made in a paper are not equal. What a paper says about another is a good indicator of the expressed sentiment. We use the text around the citation to classify it into Endorsement or “positive” Criticism or “negative” Neither or “neutral”

Why signed citations?

Findings

#1. Paper citations follow power-law distribution

Number of all, positive, negative and neutral citations of papers individually follow power-law distribution.

#2. Citation networks follow weak balance and status theory

8,300 triads formed out of 60,500 possible triads.

Over-represented signed triads (shown on right) in the paper citation network follow social theories.

#3. Authors rarely reciprocate sentiment

13,500 author pairs that cite each other.

Sentiment between authors in pairs is not symmetric.

Pearson correlation = 0.28, p-value ~ 0

#4. First opinion is the average opinion

27,000 authors cite others more than once.

Sentiment of the first citation from an author to other is similar to the average sentiment.

Pearson correlation = 0.81, p-value ~ 0

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