



mTrust: Discerning Multi-Faceted Trust in a Connected World

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The work is, in part, supported by ARO (#025071) and NSF (#0812551)

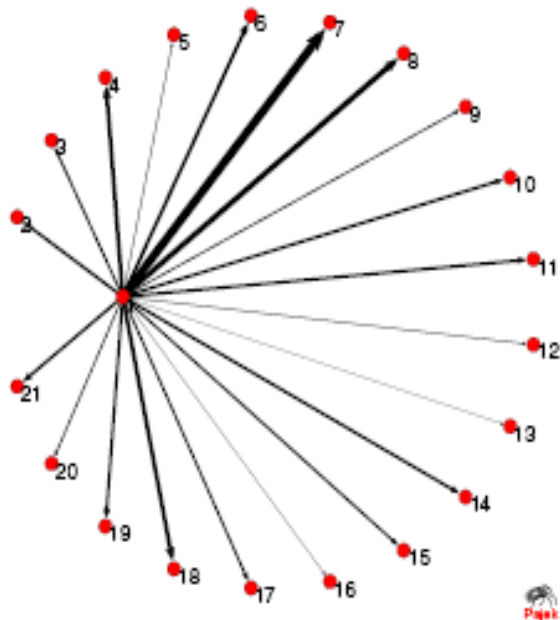


Data Mining and Machine Learning Lab

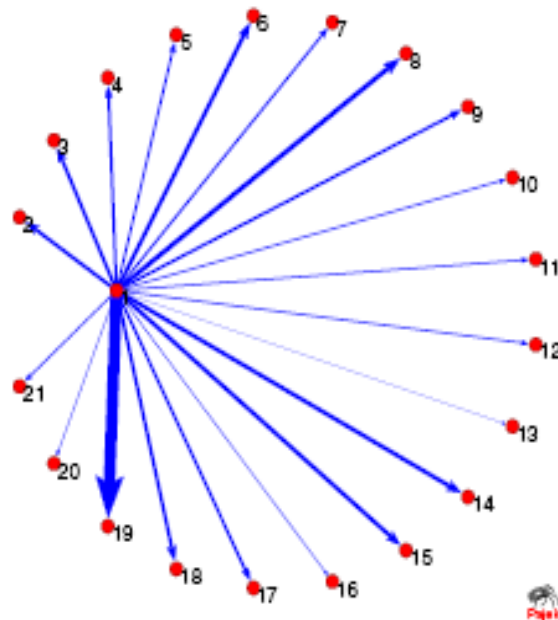


Motivation

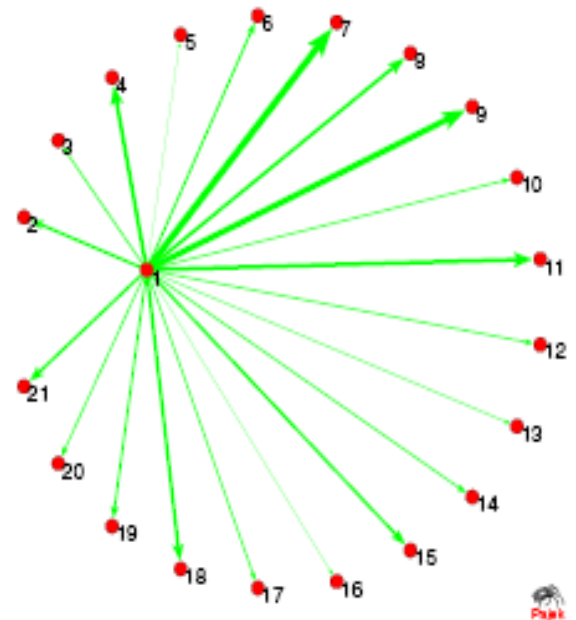
- A *Multi-Faceted* Trust Example from Epinions



(a) Single Trust



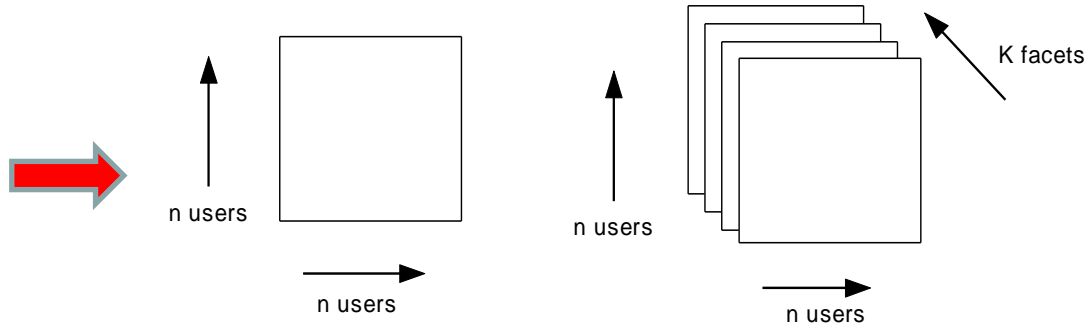
(b) Trust in Home & Garden



(c) Trust in Restaurants

Methodology

- Representation
 - Adjacency Matrix
 - Tensor



- Trust Strength Inference
 - Rating Similarity and Trust
 - Rating Prediction

$$\hat{R}(u, i) = \alpha \left(\frac{\sum_k \text{PF}(i, k)(\mu(k) + \mathbf{B}(u, k))}{\sum_k \text{PF}(i, k)} + \mathbf{c}(i) \right) + (1 - \alpha) \frac{\sum_{k=1}^K \sum_{v \in N(u, i)} \text{PF}(i, k) \mathcal{A}(v, u, k) \mathbf{R}(v, i)}{\sum_{k=1}^K \sum_{v \in N(u, i)} \text{PF}(i, k) \mathcal{A}(v, u, k)}$$



Findings

- Heterogeneous Trust Links

- Pairs of Reciprocal Links
- Transitive Trust Relationships
- Co-Citation

- Applying mTrust

- Rating Prediction
- Facet-Sensitive Ranking
- Status Theory

