**Title**: Predicting User Relationship with Embedding of Social Interaction

**Abstract**: For any SNS community, in order to help users to develop their social network, it is important to develop a recommendation system that can correctly classify users and the relationships between users, including classmates, colleagues etc. Traditional methods often calculate the similarity between users with labels and attributes that are filled in by users voluntarily or by utilizing collaborative filtering to make decision based on group of users that are similar in some way. However, these methods can sometimes be problematic because of the absence of attributes since users don't like to fill a lot of entries or expose too much personal information and that some information gathered from users are completely faked. Hence, by the assumption that the ways people interact within social network can indicate the real relationship, we want to propose a new method that mines the social network and the info-stream through the edges to embed the complex user objects to low-dimension space and make predictions with semi-supervised learning.

**Reference List:**

* Distributed Representations of Words and Phrases and their Compositionality
* DeepWalk: Online Learning of Social Representations
* Large-Scale Embedding Learning in Heterogeneous Event Data
* LINE: Large-scale Information Network Embedding
* Mining Advisor-Advisee Relationships from Research Publication Networks
* Reasoning With Neural Tensor Networks for Knowledge Base Completion

**Dataset**:

* LinkedIn User Data
* Semantic Scholar