# Community Detection with Attributed Random Walk via Seed Replacement

**Yang CHANG, Huifang MA, Liang CHANG,Zhixin LI**

Problems & ideas

- Problems: 1) It is not easy to detect high-quality seed nodes and obtain their membership with communities in attributed graph.

   2) There are few ways to treat attributes as nodes to perform random walk .

- Ideas: 1) Through a series of seed selection strategies, a high-quality set of seed nodes can be selected and their membership with communities can be obtained.

   2) A bipartite graph is constructed in which attributes are regarded as nodes. And a transition matrix with fusion of structure-attribute is generated, which improves the accuracy and efficiency of subsequent community detection.
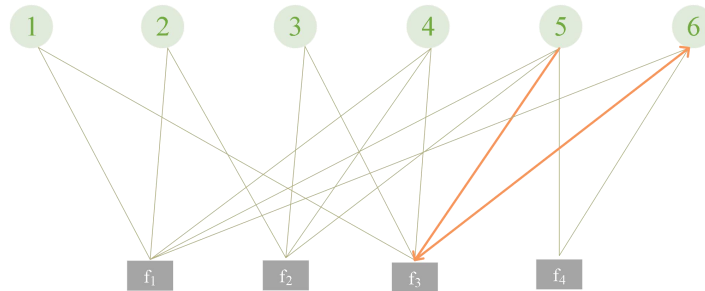
A toy example of bipartite graph

Main Contributions
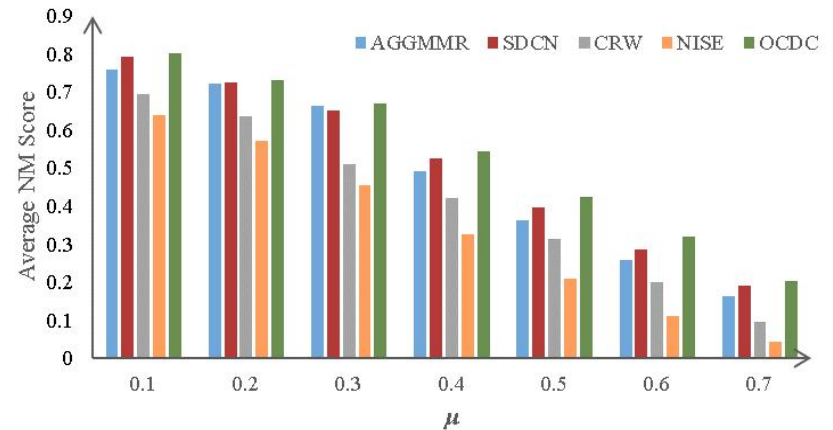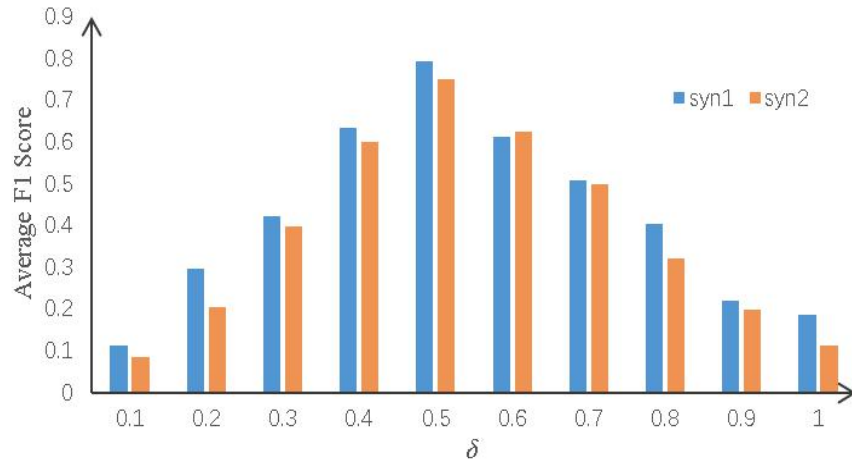
- We have presented an effective strategy, which not only find the better-quality seed sets but also obtain the seed replacement path set.

- We have explored the potential interaction between attributes and structure of a node. A bipartite network is generated and the nodes interaction transition matrix is obtained, which propel the random walks more diverse.