

Maximizing Welfare in Social Networks under A Utility Driven Influence Diffusion Model

This paper introduces new methods for maximizing welfare in social networks. UIC algorithm combines influence propagation with item adoption. This algorithm tries to solve three limitations that the previous algorithms have: adding economic information into consideration, focusing multiple products with their complementary products and increasing social networks' customer loyalty. This paper also presents new greedy allocation algorithm bundleGRD. The authors tested their algorithms in different scenarios and compare its performance with similar algorithms.

The paper has good introduction section that explains social network graphs and previous algorithms about them. Moreover, UIC algorithm combines classic IC model and item adoption frameworks for better results. UIC is very similar to recommendation methods that are using machine learning. Also, it works for both complementary and non-complementary products. Besides, authors designed their own IM algorithm PRIMA to work better with UIC algorithm. In the experiments, the authors used different data sources with directed and undirected graph data. Some of the data sources has thousands and others has millions of edges and nodes. These diverse datasets are good for algorithm comparisons. They also tested similar algorithms to show their algorithms performance results. The experiments have 3 distinct metrics: running time, different configurations and scalability. Lastly, experiments results show that bundleGRD algorithm has better results on large datasets.

This paper was the hardest one to read because it is too long and complex. Besides, there are lots of symbols and it makes reading even more difficult. There are some examples about some of the algorithms but there could be more examples in this hard to read paper for better intelligibility. Also, since the algorithms work on graph data, I was expecting more figures in this paper. However, there is only one graph data figure. Half of the paper covered by lemmas, theorems and proofs of them and some of them aren't easy to read and understand. Lastly, the paper's algorithms use graph data but the authors didn't mention how they built these graphs and how they calculate the edge weights of these graphs.

First of all, this paper should be reader friendly so that people can read it easily. It is too long and should have been shorter. If the authors cannot do it shorter, they might have put theorems and proofs at the end of the paper so that only people who are interested with these can read them (One of the paper's structure was like that). bundleGRD algorithm is a greedy algorithm and instead of it they may use dynamic programming. Finally, in the experiments section they mentioned the default parameters. There should be additional experiments with different parameter values that shows each parameters effect on the results.