Product Selection within a Social Network

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Overview

This project investigate how social network switching from product A to product B depending on product reward points (mean product popularity) and number of other people connected in network. In first part I implement switching algorithm. It also represent simulation by line chart.

Data

The provided UCSD facebook data and added some data for purpose of the project.

Questions

How we recognize comminity ?
How simulation works ?

Algorithms, Data Structures and answer to question:

Main data structure. Each vertex represent user in community.

First algorithm find out strongly connected components which represent single community. In other case, another algorithm looking for connected communites in large dataset.
In this simulation we use first algorithm. Then other algorithm determine which user will switch to another determining that using other users number using that product with reward system (total number friends using other product divide by reward a + b). Reward mean product attractive. Both variables is defined by user and can be manipulate to change ouput result.

Algorithm Analysis, Limitations, Risk:

This algorithm is runing O(n)log n because each iteration it must check all users do they will change to other product. It depends of product attraction do they will swap or not.

Correctness verification :

I create small data unit for testing. I also test application on bigest data set. No changes needed. Graphic visualisation running good as well.

Reflection:

No problem at all. In future it is good idea to add more interaction with user, because for now program running with random variables.