

Social Networks and their Applications: Churn

As we already mentioned, social network analytics can also be used to detect churn in a Telco setting. Traditional churn prediction models that are built using regression, decision tree, or neural network approaches treat customers as isolated entities. However, customers are strongly influenced by their social environments. Examples include the following: recommendations from friends, mouth-to-mouth publicity, social leader influence, promotional offers from operators to acquire groups of friends, and reduced tariffs for intra-operator traffic. Hence, by appropriately taking into account these social network effects, a better analytical model can be obtained.

We have illustrated this in our research. In a Telco setting, the social network can be constructed using call detail record (or CDR) data. This is a huge log file that stores information for every individual call, such as the phone number of the caller and callee, start of the call, end of the call, and so on. Depending on the operator and customer base, a CDR log typically grows by a few gigabytes or even terabytes per day. The CDR log can then be analyzed to build the social network. Various design decisions need to be made here such as the following: Do we make a distinction between incoming and outgoing phone calls, or in other words, do we consider unidirectional or bidirectional edges? Do we take into account the frequency of the calls and use weighted edges? How do we account for SMS, voice, MMS, or email messages? All of these questions need to be carefully considered and answered in order to build the social network.

Here you can see an example of a subset of a real-life Telco network that we analyzed in our research. The red nodes represent the churners and the blue nodes the non-churners. Here you can see another part of the same network. You can clearly see a chain or community of red nodes or churners. This most likely indicates a social network effect, where one customer decided to churn first, followed by several of his or her neighbors.

Social Network Analytics

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