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NETWORK PLANNING WITH UNEMPLOYMENT SOCIAL MEDIA

¹G. Ramya, ²M. Jothilakshmi,

¹M.Phil Scholar, Department of Computer Science, Vivekanandha College of Arts and Sciences for Women, Elayampalayam, Tiruchengode, Tamilnadu.

²Assistant Professor, Department of Computer Science, Vivekanandha College of Arts and Sciences for Women, Elayampalayam, Tiruchengode, Tamilnadu

Abstract

Social media Networks;

We survey the literature on social networks by putting together the economics, sociological and physics/applied mathematics approaches, showing their similarities and We expose, in particular, the two main ways of modeling network formation. While the physics/applied mathematics approach is capable of reproducing most observed networks, it does not explain why they emerge. On the contrary, the economics approach is very precise in explaining why networks emerge but does a poor job in matching real-world networks. We also analyze behaviors networks, which take networks as given and focus on the impact of their structure on individuals' outcomes. Using a game-theoretical framework, we then compare the results with those obtained in sociology.

Keywords: Social networks, unemployment, job search

Introduction

A large body of research, first in sociology, then in physics, and more recently in economics, has studied the importance of social networks in different activities. Social networks are indeed important in several facets of our lives. For example, the decision of an agent to whether buy or not a new product, attend a meeting, commit a crime, find a job is often influenced by the choices of his or her friends and acquaintances (be they social or professional). The emerging empirical evidence on these issues motivates the theoretical study of network effects. For example, job offers can be obtained from direct, and indirect, acquaintances through word-of-mouth communication. Also, risk sharing devices and cooperation usually rely on family and friendship ties. Spread of diseases, such as AIDS infection, also strongly depends on the geometry of social network A network is an abstract object that models these social interactions. In particular, a network is formed by *nodes* (or *vertices*) that represent the actors involved, and *edges* (or *links*) that express the linkage among these nodes. Networks provide a simplified geometrical representation of a complex magma of social relationships. However, if social interactions represent a first-order driving force for the problem under job market outcomes and how different individuals different situations due to their asymmetric positions in the network of personal relationships. Isolated individuals, or individuals with low-quality links with the rest of the community, have weaker positions in the network and are there more prone to be and to stay unemployed for a long period of time since they do not obtain (valuable consideration, a detailed study

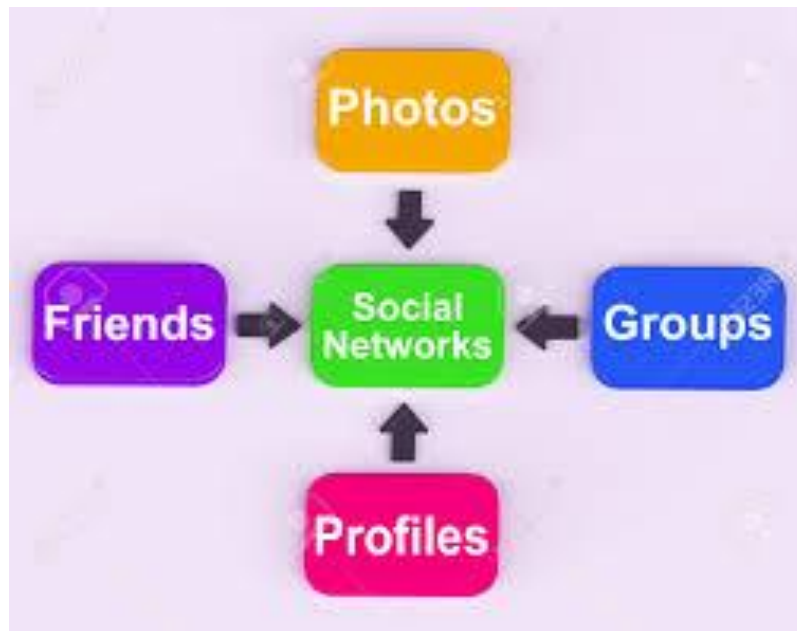
of the characteristics of the network should reveal some job market outcomes and how different individuals end up in different situations due to their asymmetric positions in the network of personal relationships. Isolated individuals, or individuals with low-quality links with the rest of the community, have weaker positions in the network and are there more prone to be and to stay unemployed for a long period of time since they do not obtain (valuable

Relevant features of social structures that induce the resulting outcomes. In the job market example, it is of paramount importance to know the geometric characteristics job market outcomes and how different individuals end up in different situations due to their asymmetric positions in the network of personal

2 Social Network Analyses

Many techniques and concepts have been developed continuously over the years.

During the last century and there is right now a powerful machinery available under the corpus of social network analysis. It is not the aim of this survey to treat with full generality all relevant contributions in this field.¹ In particular, in this section; we are Centrality measures aim at ranking individuals in terms of their relevance due to their position in the network. Social network analysis also introduces other characteristics of social structure such as the concept of *structural equivalence* (Lorrain and White, 1971) and *block modeling* techniques (White, Boorman and Breiger, 1976). The concept of structural equivalence tries to uncover similar roles and social positions shared by different actors in a network. The hypothesis behind structural equivalence is that actors who share a There are several ways of constructing numerical statistics that can give a measure of the relevance individual embedded in a complex web of social relationships. The simplest and a most natural way are simply to count the number of connections an agent has. This measure is called *degree centrality*. Under degree centrality, agents who have a higher degree enjoy a better position inside the network. This measure is associated to



Social Media Use to Cultivate and Extend Social Networks

Granovetter (1973, 1983)'s seminal work extends this concept by distinguishing

Between strong and weak ties.² this taxonomy of social interactions determines different functions of different kinds of connections. Granovetter's thesis is that the strength of a tie among two different actors is proportional to the

level of overlapping of their local social capital. Indeed, in a close network, everyone knows each other, information is shared and so potential sources of information are quickly shaken down, the network quickly becomes redundant in terms of access to new information. In contrast, Granovetter stresses the strength of weak ties involving a secondary ring of acquaintances who have contacts with networks outside ego's network and therefore offer new sources of information on job opportunities. As Granovetter (1973) claims "whatever is to be diffused can reach a larger number of people, and Although this can be the natural way to introduce power in a number of situations, there are other settings in which the power of an individual is induced by his/her position as an intermediate in the communication process. When an agent is relevant for most communication processes inside the network, he/she can exert an important role since he/she can deter or even prevent information transmission. Betweenness centrality, introduced by Freeman (1977; 1979), the degree and Katz-Bonacich centrality measures capture the power and influence

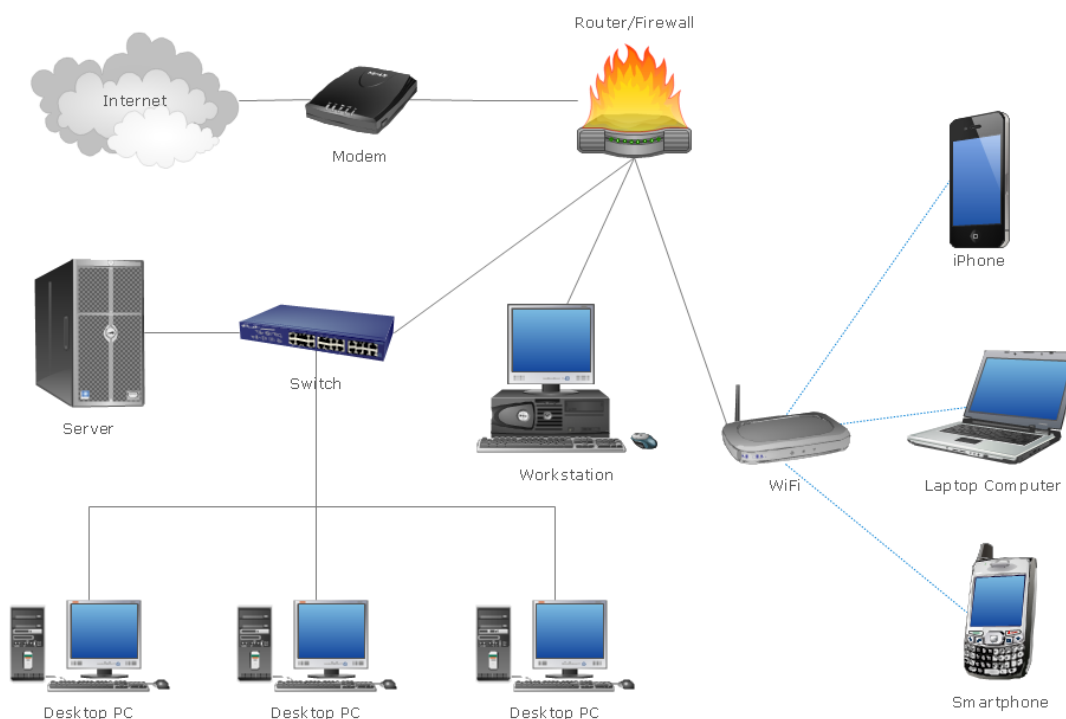
Of individuals as recipients of information. Although this can be the natural way to introduce power in a number of situations, there are other settings in which the power of an individual is induced by his/her position as an intermediate in the communication process. When an agent is relevant for most communication



Network connection media

One of the main goals of the analysis of social networks is to shed some light on the mechanisms explaining how and why networks form. If social networks are relevant, we need to understand how networks emerge and the forces determining their shape. One possible reason why a link is formed is *pure chance*. Two individuals randomly meet and create a link between them, which can represent friendship or a stable another possible reason for the formation of a link is strategic interactions. Individuals carefully decide with whom to interact and this decision entails some consent by both parts in a given relationship. *Strategic network formation models* are, precisely, grounded on this premise. We now discuss with some detail both domains of research. Social network formation when agents act in a decentralized manner. Finally, physicists and applied mathematicians have tackled issue of complexity of webs with a large number of nodes. Their mathematical tools provide a systematic way of understanding the pattern of giant components in networks and give a neat picture of some of the relevant characteristics of these networks for applied works in other disparate areas such as, for example, medicine or criminology. We hope and expect that an increasing effort will be devoted in the coming years to

Network Diagram



3.1 Employment network formation

The simplest useful model of a random network (and one of the oldest) is the *Bernoulli random graph*, often just called the *random graph* for short (Solomonoff and Rappaport, 1951; Erdős and Rényi, 1959, 1960; Bollobás, 2001). In this model, a certain number of vertices (or nodes) are taken and edges (or links) are created between them with independent probability p for each vertex pair. When p is small, there are only a few edges in the network and most vertices exist in isolation or in small groups of connected vertices. Conversely, for large p , almost every possible edge is present between the possible vertex pairs and all or almost all of the vertices join together in a single large connected group called a *giant component*. Understanding when a network is going to be fully connected is important. The Erdős-Rényi model cannot rationalize scale-free degree distributions. In particular, it predicts that the probability that an individual has a large number of connections goes to zero as this number of connections increases. Barabási and Albert (1999) propose a model which is able to reproduce the scale-free nature of degree distributions and explain the fat-tailed degree distributions observed in some networks (like the sexual contact network described above). In the Barabási-Albert model, the population is increasing over time and agents show *preferential attachment*, meaning that new agents in the network are more likely to connect to agents that are already well-connected. The authors show that the preferential attachment mechanism naturally induces the emergence of a power-law degree distribution. Although, Social Media Use to Cultivate and Extend Social Networks An examination of the social aspect of social media should reveal the negative and positive aspects of social media in cultivating and extending social contacts and network Social support networks indicate the individual's experience of inclusion. They describe the level and type of both social participation and the support of social contacts. SSNTs enable the possibility of identifying nuances within the heterogeneous group of the unemployed. SSNTs are specified according to the following selection criteria: the level of inclusion, size of the social network, ability to

make or maintain social contacts, origin of social contacts (e.g., family, work, or spare time), structure of everyday life, and perception and management of unemployment, with a focus on unemployment's effects on social contacts. Our findings correspond to the following five SSNTs: two types with a low level of social

Conclusions

This study shows that the use of social media is beneficial for maintaining the social networks of unemployed persons. The positive aspects of social media notwithstanding, there are also risks, such as attenuating offline contacts and deflecting attention away from job A Social Net? 20 searches. Therefore, the dichotomy in previous research on the use of social media—that such media either increase loneliness and depression (Kraut et al., 1998; Whang et al., 2003; Yellowlees and Marks, 2007) or enhance social inclusion and participation (Amichai-Hamburger and Furnham, 2007; Contarello and Sarrica, 2007)—must be evaluated separately for each individual. Distinguishing the various SSNTs and analyzing their specific social media use helps identify individuals who might benefit from the supporting functions of social media. Not all SSNTs must be stimulated, and each type must be stimulated differently. Whereas the 'activity-included' and the 'multilateral-included' types do not require distinct treatment, training for 'family-included' individuals might be developed to alter their engagement with social media. Members of this group could use their time to expand their offline contacts online and thus to (re)build social support networks online—which they can rely on during unemployment. Simply providing more support to attain higher social media skill levels would be insufficient for individuals of this SSNT. Such an approach, however, would be effective for 'the contact searcher.' As previously discussed, motivational traits and social media literacy help determine people's online behavior. Because 'contact searchers' are highly motivated to expand their social networks but have not cultivated the benefits of social media, training for the necessary skills might enhance their online experiences. 'The excluded' should be assisted in becoming acquainted with social media by emphasizing the anonymous nature of and the control that they have over social interactions online (e.g., Amichai-Hamburger and Furnham, 2007). While by no means replacing the importance of offline social networks, which remain the main form of social support during unemployment, social media may thus partly provide

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