

A Fundamental Study on Research Challenges Associated with Social Network Analysis

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Abstract- Obtaining large scale data is one of the key challenges in studying social interaction. Understanding social interaction has been a great interest in various research field like sociology, economy, political science, marketing and so on. This paper studies the “need to know” basics about social media, social network and Social Network Analysis[SNA]. In this paper along with introducing some of the studies in this area, a categorization of research subareas was presented and a base has been provided for researchers to briefly get acquainted with some new, attractive and useful research areas. This information has never been available with such a huge volume, detail, and ease and speed of access before. A few number of social data analyst those who are interested in having this information or the results of analyzing it alongside their motivations are: commercial companies for advertising and promoting their products, sociologists for analyzing the behavior and features of different societies, intelligence organizations for preventing and detecting criminal activities, educational and cultural activists for promoting their goals, and employers for acquiring information about job seekers. This paper will sought after for the purpose of having precise knowledge for critically analyzing Social Networks, social media their analytics and their related challenges and opening areas.

Keywords- Social Media, Social Network, Social Network Analysis

I. INTRODUCTION

The world has fallen mad with the social media and now automatically turns to online platforms to give the fantastic opportunities for the people to engage the audiences and encourage content sharing, but also gives lot of challenges for getting cut through and keeping up to date ourselves. Social data technology revolution has been attracting trillions of people by generating enormous data continually at ever increasing rate. Social networking sites store huge enormous of data involving search engines, media sharing sites, stock trading sites and news sites through the day[2]. For example Facebook continued to dominate as the most used site with the 93% of social networkers maintaining a Facebook profile since 2012. Other social networking platforms like LinkedIn, Instagram and Google+ and Twitter, there has been a gradual raise in number of users every day.

Social Networking is still used primarily in the consumer working space for a quick interpersonal communication or information sharing. However, it is also increasingly taking hold in the business world with the customers and partners in both for B2B and B2C corporate communications[4]. Key business users include Marketing, Customer Service and Support, sales or project, sharing account information with co-workers, locating internal expertise, setting up meetings, staying in touch with colleagues and marks a continues strong growth with the consumer and business users worldwide as well. The worldwide number of users will show a drastic top of growth to 1.8 billion by 2015 and it is projected to grow over to be 2.5 billion by 2019. Different kind of social data in internet can reveal how users connect and interact with each other. Currently the wide use of laptops, iPod, pc, mobile devices and additional internet web applications has been full-grown and there is a necessity to search out what

reasonable information do individuals share more? How people get connected to social media? Variety of fields shared in profiles? Then to include the problems the analyst has got to understand what is social media and social network? To really perceive the interchangeable distinction between the two, we tend to first ought to outline them. Knowing the variations will facilitate the individuals to higher understand on a way to leverage them for his or her research desires. Social media and social networking are found to be similar in many several major events across the planet. It is honest to mention that social networking may be a subcategory of social media. It is a decent plan to seem at the variations between the two here and go away with a transparent understanding of the variations.

II. SOCIAL MEDIA

The buzz word “social media” is that use of web-based and mobile technologies to show communication into an interactive statement.



Figure1. Social media

Before the web existed, the media was dynamic state it absolutely was concerning TV, newspapers, magazines, etc. Once media was not static, an area wherever you'll transmit data to others [3]. Tremendous interactivity capabilities became accessible to everybody and it felt far more sort of a personal, one-one-one relationship than the rest and extremely encompasses many differing types of media, similar to videos, blogs, etc. Primarily, social media could be a platform for broadcasting, in simple manner it's a wheel of (combination) communication (social networks)

and publishing. To cut back inessential complication the Medias are differentiated to urge a transparent understanding.

III. SOCIAL NETWORK

Teams of individuals with common interests, or like-minds, associate along on social networking sites and build relationships through community. With social networking, communication is two-way. Looking on the subject material or atmosphere, individuals congregate affix others with similar experiences and backgrounds. Conversations are at the core of social networking and through them relationships are developed. As a result of social networking is direct communication between you and those who you decide on to connect with, your conversations are richer with additional purposeful and personal [5]. The term social network refers to the articulation of the social relationship that play twin roles, the acting each as a unit or the node of a social network likewise as a social actor. Networks are sometimes painted by the diagrams wherever the vertices are painted by points, arcs and by lines with arrowheads, and edges by lines while not the arrowheads.

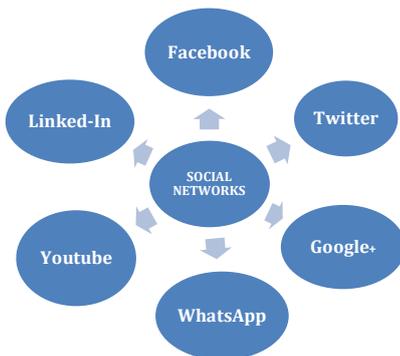


Figure 2. Social Networks

Leading social networks swash a high range of user accounts or sturdy user engagement metrics. Let's say, Facebook is that solely powerful social network that surpassed the one billion monthly active user mark and has, as of 2015, almost 1.5 billion MAU worldwide. Shortly when its launch, relative newcomer pinterest was the quickest freelance web site in history to succeed in over ten million monthly distinctive guests, but as of 2015, it's still behind different sturdy players, like photo-sharing social network Instagram or microblogging platform Tumblr Perhaps the most important distinction between social media and social networking is that the goal that you're making an attempt to attain with social networking your final goal is to create your network of fans/followers and foster those relationships.

IV. SOCIAL NETWORK ANALYSIS

From the data mining perspective mining social data opened many new challenges and opportunities. The simultaneously emerging and fast maturing social network analysis (SNA) delivers the most promising knowledge and

extract hidden valuable insight to establish the process of knowledge discovering social network structure.

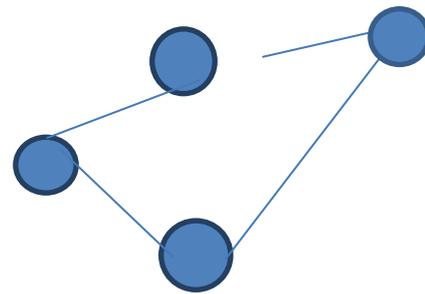


Figure 3. Structure of Social Network

Typically the SNA uncovers interesting patterns, relationship, and kinship, closely like people, predict future threats and promises, customer's behavior through online click stream, predicting new growth of profits and relationship hidden in a large volume of social data like web content data in web data mining. Social network analysis [SNA] is the mapping and measure of relationships and flows between folks, groups, organizations, computers, URLs, and different connected information/knowledge entities[10]. The nodes within the network are the folks and teams whereas the links show relationships or flows between the nodes. SNA provides each a visible and a mathematical analysis of human relationships. Management consultants use this system with their business.

V. MOTIVATION AND CHALLENGES

The emergence and recognition of on-line social networks in recent years has modified the web scheme resulting in an additional cooperative atmosphere. Nowadays, many several web users participate in social networks, create communities, produce and consume social media content in revolutionary ways. The section discusses the present hot topics of social networks and presents a collection of open analysis challenges involving on-line social networks.

A. Spam Filtering

The perception that attracted millions of internet users in recent years on online social networks is remarkable. Unfortunately, recent evidence shows that, in the wrong hands they can also be effective mechanisms for spreading attacks. In social network sites, spammers often disguise themselves by creating fake accounts and hijacking normal user accounts for personal motives. Spammers in social media behave like a normal user and they continue to change their spamming strategies to fool anti-spamming systems. Users heavily fed up with spam messages, even Facebook pages are approached by fake accounts[1]. Major research topics in spam detection includes spamming in e-mail detection, spamming Web page detection and spamming instant message detection. Recently, the success of social media such as Facebook and Twitter have also attracted a new way of Social Networking Spamming. Today the spammers get smarter and they create new high precision methods, to avoid being detected unfortunately, the bulk of the existing solutions are not directly applicable

because the series of distinct characteristics pertaining to the OSN spam.

B. Micro-Blogging

Microblogging is the form of blogging that has become popular over the last few years. A microblog differs from a traditional blog in that, content is usually made up of short sentences, fragments or links to videos, images and websites. Microblogging is a broadcast medium in which its content is usually in the form of short updates, and can be sent from either a computer or mobile device (mobile phone, I-pad etc.) People can use it as a form of 'crowd-sourcing' to ask questions or ask for help. Microblogs are evolving into a richly refined medium for maintaining awareness, building relationships and finding and sharing valuable information. Microblogging is used to communicate with the large audience of followers[9][8]. There are some advantages to access the knowledge from large number of users to obtain technical assistance and links to interesting information. Some microblogging services offer features such as privacy, settings etc. This may include text messaging, instant messaging, e-mail or digital audio.

C. Sybil Detection

Social networking is a double-edge sword. On the one hand, it is a powerful tool for enhancing socialism and on the other hand, it could harm the entire society if not used appropriately. Fake identities and Sybil accounts are spreading throughout in to-days online communities. They are amenable for a growing number of threats, including fake product, malware and spam on social networks like Facebook, Tumblr, Linked-In by creating fake users. Sybil detection begin to grow in the fundamental behavioral patterns that separate real and Sybil users. It is easier than ever to create fake identities and user accounts in today's online communities. Most proposals concentrate on detective work Sybils in social networks by leverage the belief that Sybils can realize it tough to be friend real users. Studies have shown that Sybils area unit to blame for massive amounts of spam on Facebook, Twitter[8]. Numerous systems are planned by the analysis community to observe and mitigate these Sybils, but they still continue to be the threatening to the world.

D. Community Structure

Community formation is vital to know inside Social Network Analysis, so as to know patterns of collaboration. Social networks embody community groups supported common location, interests, likes, dislikes, etc. A social network is sculptural by a graph, wherever the nodes

FUTURE ENHANCEMENT

Visualizing complex relationships, Identifying powerful and influential participants, Influence monitoring and outlook, Spotting influencers, Clustering of complex networks, Recommendations of interesting persons and resources, Terrorist identification, Privacy preservation user behavior analytics, stream mining are the other areas that can also be focused in this area. This study has several

represent people, and an edge between nodes indicates that an immediate relationship between the people[7][6]. Some typical issues in SNA include discovering terms of people sharing an equivalent properties and evaluating the importance of people during a typical social network, there continuously exist varied relationships between people, that involves friendships, business relationships, and community structure during a social network is analyzed to spot the patterns of closeness between users during a social network.

E. Sentiment Analysis

Sentiment Analysis is that the method of determinant whether or not a bit of writing is positive, negative or neutral it is also referred to as opinion. Mining, account, the opinion or perspective of a speaker. A standard use case for this technology is to find how individuals feel about a particular topic. The underlying technology platform for sentiment analysis is Natural language processing(NLP)[5]. Sentiment analysis is wide applied to reviews and social media for a range of applications, starting from promoting marketing to client services a special technique for determining sentiment is that the use of a scaling system whereby words unremarkably related to having a negative, neutral or positive sentiment. The sentiment classification appearance parenthetically at emotional states similar to "angry," "sad," "happy."

VII. Conclusion

One factor that social media and social networking have in common is that they each depend on viral agent promoting to become really roaring. If the content goes viral agent more and more individuals are taking note and therefore the additional on-line traffic. The fundamental distinction between social media and social networking is that social media helps individuals to create the affiliation (connection) and social networking enhances that affiliation individuals get along as a result of they need common interests, passions and as they get to understand one another through interaction over time. Every challenges of SNA have their own specific set of expectations, limitations, protocols, potentials, pros and cons a number of that have evolved over time. The results tapped out from Social Network Analysis [SNA] could facilitate to create valuable prediction or observation in future world. Social information can become a useless word if it don't have a right tool, applying SNA techniques, methods, models and algorithms cause additional helpful services in each walks of life there are nuances which will be known whereas describing SNA, and it's a subtle-but-significant amendment, from person-centric to event-centric.

enhancement areas, like it only discuss few challenging areas. It would therefore also be focused on identifying powerful and influential participants, Influence monitoring and outlook, Spotting influencers, Clustering of complex networks. Recommendations of interesting persons and resources, Terrorist identification, Privacy preservation user behavior analytics, stream mining ultimately these could be the focusing areas practically and possibly an analyst can cover.

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