**NETWORK ANALYSIS IN SOCIAL SCIENCE**

The purpose of this paper is that social media network can be used by researchers for carrying out network analysis in the field of social science. The paper discusses about the history of social networks like: scientist constructed a sociometry graph to solve runaway cases of a high school, researchers at MIT began studying the effects of different communication network structures on the speed and accuracy with which a group can solve a problem. In 1950’s Kochen states that if 2 people are chosen at random from U.S at least 50% of the pairs would be linked by chains no more than 2 intermediates, however 20 years later Milgram stated the chain would be of no more than 6 intermediates. Urbanization also led to reduction of network density in smaller communities. Researchers also studies how social networks affected people who are connected through kinships (“married to”, ”in-laws” etc.) they found out that in case of husband and wife more denser is the network for these 2 individuals more independent they seem to be and vice versa. They also found out that since weak ties in social networks were eliminated first, they shouldn’t be now as weak ties can yield valuable resources. The paper then discusses the basic property of social network theories which include type of ties (strong and weak ties), importance of structure which deals with the density and centrality of the network structure and theoretical mechanisms. Adoption Mechanisms which states that nodes become homogeneous as a result of experiencing and adapting to similar social environments. Binding mechanism where nodes can bond together to form new nodes and exclusion mechanism where nodes are excluded. However, more research needs to be done on predicting network properties such as clusterdness of networks, distribution of node centrality and friendship ties.

**GENDER IDENTITY AND LEXICAL VARIATION IN SOCIAL MEDIA**

The purpose of this paper is to identify the gender of each user among the 14,464 users that have been selected having common names according to the historical census information in the US Social Security Administration. The paper discuses previous work on gender identification which follows norms such as: content-related factors are used more by men whereas style-related factors are used more by women, informational word classes are used more by men whereas women use more of involvement and interaction, women are more likely to write ‘diary’ while men are more likely to write ‘filter’ blogs. The analysis was performed on 9,212,118 tweets, authors used regularization to dampen the effect of any individual variable. A ten-fold cross-validation which divides the dataset into 10 parts and trains the model on 80% of the data and tune the regularization parameter to 10%. The authors then found out a set of words that were more commonly used by men and women respectively, they found out that taboo words, Hashtags and Named entities were more commonly used by men whereas punctuations, non-standard non pronounceable set of words were more commonly used by women. They applied gender identification to clusters of authors, they implemented EM framework for clustering similar authors, and found out that authors that were grouped together closely in one cluster turned out they had the same gender, almost 63% of the times they found this on basis of the same bag of words technique. They applied gender identification in social network by creating undirected network from the data, they found out that more gendered the authors language was the more gendered was the network. Future research needs to be done on how micro-interaction of individuals yield new insights about various settings and contexts in which gender is manifested and constructed by language.