CHAPTER 8

CONCLUSION AND FUTURE SCOPE

With an increasing population subscribing to the social network, Facebook, Twitter, etc. have established itself as a dynamic medium of communication. There has been a growing public interest and fascination in creating and sharing contents through social media. This has led to voluminous user generated contents, building socially intelligent and personalised applications. The pervasive use of online social media has given rise to a new problem which is inter disciplinary with questions and ideas flowing from both computer science and social science domains.

My research thesis is motivated by two research objectives basically focusing on modelling social network interactions. The interest in this research is the mapping of real life equivalence.

From the knowledge discovery perspective, the aim is to understand the effects of social media sites on societal behaviour by analysing user-generated data collected from these sites; to understand the information diffusion pattern in social media, promote your business and distribute content.

From the decision making perspective, the influence of social media and its positioning in the commercial environment and measuring the effectiveness

of its usage in building communication and marketing campaigns have been assessed. Specific case studies are used to study the "how" and "why" of consumer and brand engagement, building the relationship with the consumer with proper social media strategy and how the participation increases the brand awareness, visibility and connectivity to the public through interactions.

8.1 Main Contributions

Four chapters explain the tool and model created to achieve the research goals. Each chapter is focused on the unique problems of the user group of the social media (online marketer, regular user, and application provider), with different foci and contributions.

The information diffusion patterns of daily active engagement and social listening were studied. This virality promotion helped in gathering relevant data and to use the information to make smarter business decisions. Real time analysis of information helped in understanding conversations happening around the brand, to gauge customer sentiment and to find exactly what they are looking for. The analyses performed provided important marketing implications. It was reinforced that

One of the main goals of my dissertation was to shed light on the hidden underlying structure and temporal dynamics of information diffusion, with a particular emphasis on the diffusion of information over mainstream social media. The study revealed that engaging customers and building strong brand relations have increased impact on information diffusion. It is

concluded from various case studies conducted that the speed and volume of information diffusion are dependent on multiple factors like network clusters, diversity of actors, information flow network triggered the decision process.

The social media conversation around an eco-tourist resort property domain was studied to understand opinion mining techniques. A tool was developed to bring structure and organization to unstructured chatter on social media cantered around the topic like "people talking about", "Named Entities and topics that people are referencing". The ontology and taxonomy tools were integrated for semantic search. The tool determined the sentiment orientation of opinions and the integration with CRM feedback helped to improve the services offered. This resulted in increased traffic. The casual visitors are classified by the rule engine as interested or not interested and that lead is passed on to CRM, for mailing or another contact for conversion. With a manual intervention, the conversion rate was reported as 52%. The accuracy of classification based on Sentiment Analysis was calculated as 72%.

An extension of this tool was implemented for a social media based public engagement in a relatively less used arena. The tool developed was implemented in listening and analysing feedback of citizens for monitoring developmental initiatives of Governments and Multilateral agencies. Data was collected using crowd sourcing techniques from social media. This was analysed and the results are presented using open source tools. These

patterns provided insights into the popular feedback and sentiment effectively and accurately than the conventional method. The feedback channels were integrated. The refinement of crowd-based analysis along with opinion mining, can be of help in governance, decision making and measuring the impact of the usefulness of funding of public money. The tools and methods developed and used were integrated into a Knowledge Management platform . The relevance of matching was found to be about 71% for a count of 8.

In a controlled behavioural experiment setup, the data collected from the concerned agencies were used to improve our understanding of the specific dynamics between the actors in the network.

8.2 Challenges faced

Sentiment analysis is topic sensitive. The accuracy of the Sentiment Analysis is much better for closed-domain text than open domain text. It is also topic-sensitive and accuracy improves if the context is identified.

The other factors that affect the result are

1) Sarcasm

2) Abbreviations, punctuations, grammar

3) Anaphora resolution in resolving what a pronoun or noun phrase refers to

8.3 Conclusion

The case studies and scenario implementation explains how information is diffused through social media, and how customer decision is impacted. The theoretical framework is developed based on the available literature. The quantitative research method is adapted with real time data gathered from the agency. Findings and conclusions presented are based on the data collected and is dependent on various environmental factors.

The research problem is strongly influenced by the complex, social, technological and cognitive phenomenon that emerges in an increasingly networked digital world. The model is developed based on the assumptions that physical, biological and cognitive mechanisms are responsible for diffusion.

Sentiment Analysis is more than just a social analytic tool. But it is a field that is still being studied, although not at great lengths due to the intricacy of this analysis. The field has functions that are too complicated for machines to understand. The ability to understand sarcasm, hyperbole, positive feelings or negative feelings has been difficult, for machines that lack feelings. Algorithms have not been able to predict with more than 70% accuracy, the feelings portrayed by people. Yet with so many limitations this is one field which is growing, at a great pace within many industries. Crucially, the field of opinion mining looks not only at sentiment, but the topics driving that sentiment. This has also opened up new research

capabilities in the world of market and political research. The sheer quantity of online conversations coupled with the instantaneous reactivity of this digital chatter has meant that sentiment-driven opinion data has become a mineable, monetisable resource.

Lexicon sentiment creation is labour intensive and there are already unsupervised methods to create them. Here machine learning plays a crucial role. The algorithms will have to understand and analyse natural text, concept-wise and context-wise. Time will also be a crucial element looking at the amount of data that is being generated on the Web today. Collecting opinions on the web still require processing that can filter out un-opinionated user-generated content and also test the trustworthiness of the opinion and its source.

As new text types appear on the Social Web, the techniques to pre-process, as well as to tackle their informal style must be adapted, so as to obtain acceptable levels of performance of the sentiment analysis systems. The field will have to combine with effective computing, psychology, and neuroscience to converge on a unified approach to understanding the sentiments better. Because Sentiment analysis bases its results on factors that are so inherently humane, it is bound to become one of the major drivers of many business decisions in future. Improved accuracy and consistency in text mining techniques can help to overcome some current problems faced in Sentiment analysis. Looking ahead, what we can see is a true social democracy that will be created using Sentiment analysis, where

we can harness the wisdom of the crowd rather than a select few "experts"; a democracy where every opinion counts and every sentiment influences decision making.

8.4 Future thoughts

In the connected world, a visible difference between decision makers and their stakeholders is evident. Massive data of customer engagement is available. Through a tailored understanding of their needs, personalization can lead to customer loyalty and increased sales. A Chatbot is the computer program developed to consult online human customers. This is powered by artificial intelligence and machine learning which treats clients in the individual stage, without human intervention. The chatbots can be included in any of the platforms like Skype, Messenger, etc. Understanding the emotions and responding by chatbot is the awaited technology in Machine learning.

In the age of big data, Google's open source software library for numerical computation using data flow graphs Tensor Flow™[108] is expected to drive forward advancement in machine learning and artificial intelligence. Tensor Flow is an agile tool. Combining the processing power of Tensor Flow and availability of data is expected to give insightful business applications which can alter the state of decision-making in business enterprises.

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