Comparative study of Emotion recognition in social media

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1. ABSTRACT

Sentiment analysis in Online social networks (OSNs) is a very active field of research. The prime research motive of sentiment analysis in OSNs has been analysing textual data shared over popular networks like Twitter and Facebook. But with the explosive growth of smartphone industry, inclusion of other media factors are on the rise. Mediums like videos, photos and audio convey much more information about the context of a social interaction than plain text. This has posed an interesting prospect for computer science i.e. inclusion of human affects conveyed through these mediums to allow another dimension for social interactions. These mediums however pose a higher complexity in problem space. Our paper tries to explore this space by including neural network based approaches and also shows that using heterogeneous network designs together can give us a much higher precision in understanding the emotional context of a media. In this paper we look at commercially available techniques, and compare results with custom designed neural networks. Finally we explore possibility of combining different approaches and benchmark them against some popular datasets in the wild

2. INTRODUCTION

Online social networks (OSNs) have seen a massive surge in usage over the past decade. The surge is also going hand in hand with the explosion of smart phone industry. More and more social interactions are now driven by media content like selfies and group selfies because of the ubiquitous nature of cameras. A sharp change in cultural aspects of online social interactions are evident and have also been studied in detail in papers like [5].

3. A SOCIAL APPROACH TO EMOTION:

Emotions are fundamental part of our day to day social interactions. A face to face social interaction is generally augmented with facial expression, body language and linguistic sentiment to convey the exact meta information. These properties are very human in nature and are mimicked in the social world as well. Studies like [3] have explored the world of linguistic sentiment in social networks, by comparing several popular sentiment analysis methods used for twitter analysis. Our paper tries to explore a similar exercise for perceptual emotion in social media.

When it comes to perceptual emotions, there are two broad categories of emotions that could be explored. The first category looks at the perceptual emotion evoked by a social media content. The second category talks about the actual latent perceptual emotion that comes with the context of the content itself. We will discuss about the research problems about both these categories.

3.1 Evoked perceptual emotion

Several works have done in depth studies using methods like crowdsourcing to understand the different shades of a particular evoked emotion. Works like UrbanGems [1] and StreetScore [4] use crowdsourcing methods to understand degrees of human emotions evoked because of pictures of real urban neighbourhoods. Emotions like the feeling of safety and aesthetics are especially hard to quantify and crowdsourcing helps the authors to do some interesting modelling. On the other hand there are papers like [2] by L. Jeni et.al. describe utility of actual facial expression detection for understanding content consumer reaction. Such approaches help us understand the very effect of a particular content on the consumer.

3.2 Latent perceptual emotion

This approach is what this paper stresses on. By latent perception, we mean the hidden emotional parameters, which are part of the very content. Social networks like reddit have specific subreddits that work on appeling to these types media content that evoke emotions like empathy, love . One such popular sub-reddit is labelled R/aww which contains images and GIFs that showcase cute animals and animal behaviours. These specific social channels are popular because the content shared over these channels have a certain type of latent emotional response.

Our paper focuses on this part of the story, and tries to survey and benchmark certain state of the art methodologies out there. We also propose certain approaches, which works as a hybrid and show that we can attain much better performance if a heuristic approach to combine certain methods is taken.

4. EMOTION ANALYSIS METHODS

To the best of our knowledge we have evaluated certain popular approaches in solving the problem of extracting latent emotion in a media content. Most of these approaches are actually concentrating on extracting facial expressions for videos and images.

5. REFERENCES

[1] ADAM BARWELL, DANIELE QUERCIA, J. C. http://www.cam.ac.uk/research/news/how-to crowdsource-your-happy-space, 2012.

[2] JENI, L. A., LŐRINCZ, A., NAGY, T., PALOTAI, Z., SEBŐK, J., SZABÓ, Z., AND TAKÁCS, D. 3d shape estimation in video sequences provides high precision evaluation of facial expressions. *Image and Vision Computing 30*, 10 (2012), 785–795.

[3] JOO, J., LI, W., STEEN, F. F., AND ZHU, S. C. Visual persuasion: Inferring communicative intents of images. In *Proceedings of the IEEE Computer Society Conference on Computer Vision and Pattern Recognition* (2014), pp. 216–223.

[4] NAIK, N., PHILIPOOM, J., RASKAR, R., AND HIDALGO, C. Streetscore – predicting the perceived safety of one million streetscapes. In *Computer Vision and Pattern Recognition Workshops (CVPRW), 2014 IEEE Conference on* (June 2014), pp. 793–799.

[5] SOUZA, F., DE LAS CASAS, D., FLORES, V., YOUN, S., CHA, M., QUERCIA, D., AND ALMEIDA, V. Dawn of the selfie era: The whos, wheres, and hows of selfies on Instagram. In *Proceedings of the 2015 ACM on Conference on Online Social Networks - COSN '15* (2015), pp. 221–231.