

Emotion Recognition from Emoticons based on Deep Neural Networks

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1. Introduction

In recent years, text communication has been grown steadily so that all kinds of daily contacts could be conducted now through Internet based text messaging services. As an advantage of text-based communication via the Internet, we can quickly interact with anyone wherever we are. In this paper, we propose a method to classify emotions expressed by emoticons by letting a deep convolution neural network learn the features of emoticons images. By treating emoticons as images, it is possible to capture visual features that express a person's feelings or mood better than when handling emoticons as character strings.

2. Related Research

Basically, emoticons mimic human facial expressions. There have been studies that treat emoticons as character strings[1], where the positional relationship of characters in emoticons, and the similarity of character shapes, are important. However, it is difficult to find meaning in the sequence of characters themselves. There are other methods of people facial expressions using FACS (Facial Action Coding System). Recently, there is a method based on a deep convolution neural network (DCNN) [2]. We used such method in the current research to classify emotions expressed by emoticons.

3. Proposed Method

We converted emoticons from character strings to images and have them learned by a deep convolution neural network. The emoticons are converted to a gray scale images because it does not include RGB color information. To create emoticon images,"Text To Image" converter was used [3].There are 28 font types used for imaging of emoticons. As a result, 28 kinds of images are generated for each emoticon. Additionally, in order to compensate for the lack of emoticons data, we add various modifications to their learned images so that the overall data is increased accordingly.

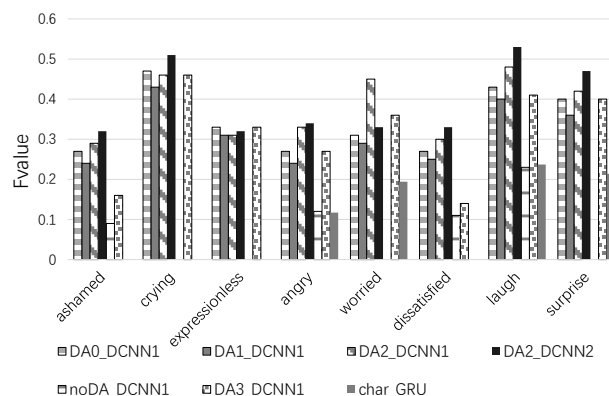


Fig 1: Comparison of F value by emotion for each condition

4. Experiment

The Experimental result is shown in Fig 1.

In the experiment, it can be seen that the method, in which we used DCNN 2 for the network and DA 2 for data extension, has an average high F value. In this experiment, data expansion is performed by using ImageMagick[4], an image processing software. From this, it can be seen that the magnitude of data amount has a greater influence, on the performance of the model, than the type of the data expansion.

5. Conclusion

In this research, we proposed a method to classify emotions expressed by emoticons by treating emoticons as images and have them learned by a deep convolution neural network. The results showed that it is possible to classify emotions by the proposed method, with an average precision of 42.7% .

References

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- [2] Burkert,P.etc, "DeXpression:DCNN for Ex-pression Recognition," CoRR, 2015.
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