Extended Abstract for WiNLP

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Abstract

Humor represents one of the most unique and intelligent activities that define humans. Our research focuses on humor detection by using a variety of methods in order to learn a sense of humor. So far we have developed system Duluth using N-gram language models to recognize humorous tweets, which participated in SemEval-2017 Task 6 and ranked highly in the task evaluation. This paper presents the current work of our research along with promising results, as well as possible future work.

1 Introduction

Humor is considered to be a human-only trait and one of the most amusing and mystifying human activities. It enters the domain of philosophy, sociology, psychology, linguistics and computer science. With the increasing development of Artificial Intelligence(AI), Machine Learning(ML) and computational linguistics, *Computational humor* has found its way to numerous studies. Humor generation has been a prevailing focus of computational humor (e.g., (Stock and Strapparava, 2003), (Özbal and Strapparava, 2012)). However, *humor detection* remains a less explored and challenging problem (e.g., (Mihalcea and Strapparava, 2006), (Zhang and Liu, 2014), (Shahaf et al., 2015), (Miller and Gurevych, 2015)). In our research, we implement systems that try to utilize and combine diverse methods to recognize humor better.

To get started and build a solid foundation of our work, we choose to use N-gram Language Models (LMs) first to tackle the problem. The idea of using LMs is to learn a sense of humor by gaining useful information from a word and its neighbors (Jurafsky and Martin, 2009). Our research is also associated with the SemEval-2017 Task6 #HashtagWars: Learning a Sense of Humor (Potash et al., 2017). The task aims to characterize the sense of humor of a particular source consisting of humorous tweets submitted to a comedy show *@midnight*. There are two subtasks involved: Pairwise Comparison (Subtask A) and Semi-ranking (Subtask B). Our system ranks tweets based on how funny they are by training N-gram LMs on two different corpora, the funny tweets corpus which is provided by the task and the news corpus which is freely available for research.

In order to evaluate how funny a tweet is, we train language models on the tweet data and the news data respectively. Tweets that have a higher probability according to the tweet data language model are ranked as being funnier. However, tweets that are less probable according to the news language model are considered the funnier since they are the least like the (unfunny) news corpus. We rely on both bigrams and trigrams when training our models. We use KenLM (Heafield et al., 2013) as our language modeling tool with modified Kneser-Ney smoothing and back-off technique.

2 Method

Our system Duluth [1] estimated tweet probability using N-gram LMs. First, our system combined all training data into one single file with data preprocessing steps including filtering and tokenization. Second, the system built N-gram language model using KenLM. Then the system computed log probability for each tweet based on the trained N-gram language model. Last but the least is

[1] https://xinru1414.github.io/HumorDetection-SemEval2017-Task6/

the tweet prediction: for Subtask A, given two tweets, the system predicted which one is funnier according to their probability scores; for Subtask B, given a set of tweets associated with one hashtag, the system ranked tweets from the funniest to the least funny according to their probability scores. Note that the system went through these steps on both training datasets respectively.

3 Results

DataSet	N-gram	Subtask A Accuracy	Subtask B Distance
tweets	**trigram**	**0.397**	**0.967**
tweets	bigram	0.406	0.944
news	**trigram**	**0.627**	**0.872**
news	bigram	0.624	0.853

Table 1: Evaluation results (bold) and post-evaluation results based on *evaluation_dir* data. The trigram LM trained on the news data ranked 4th place on Subtask A and 1st place on Subtask B.

4 Discussion and Future Works

References

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