PROJECT PROPOSAL

In this project, I am planning to use deep learning features on one of the widely used area in NLP, sentiment analysis. Sentiment analysis mainly aims to extract sentiment over texts. This methodology is widely applied in social media, marketing and even banking applications. In this wor, I plan to fetch user's opinions over movies, whether they feel positive, negative or neutral on the filme they've watched. To extract sentiment information, I am going to implement a recurrent neural network that performs sentiment analysis over IMDB movies dataset.

Dataset I plan to use is mainly the Large Movie Review dataset [1]. This is a dataset for binary sentiment classification containing substantially more data than previous benchmark datasets. Dataset contains a set of 25,000 highly polar movie reviews for training, and 25,000 for testing.

There are various works in literature, that perform sentiment analysis using neural networks with different approaches. For example in "Deep Convolutional Neural Networks for Sentiment Analysis of Short Texts", authors performed study of sentiment analysis using convolutional neural networks. However it is a generally used and better approach to use Recurrent Neural Networks over text precessing wors. Hence, I decided to use RNN's to perform sentiment analysis. "Opinion Mining with Deep Recurrent Neural Networks"[2] is a nice work on that topic. In that study, authors applied deep RNN's to the task of opinion extraction formulated as a token level sequence labeling task. In their experiments, they proved that deep RNNs perform better over shallow neural networks and some other ML techniques. I plan to take this work as a baseline for my study.

In my work, I am planning to implement same methodology over sentiment analysis task with the paper [2]. I am planning to implement Recurrent Neural Network for that aim. Different from that work, I am planning to use different dataset, which is IMDB movies dataset.

In the next two weeks, I am planning to fetch the dataset and analyze it learn the details, how can I use it in my work etc. In the preceeding month, I am planning to implement the RNN and get the results. After finishing implementation and experiments, I will write the paper about my work. I am more than excited to work over such a nice topic.

İsmail Talha YILMAZ

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[1] - http://ai.stanford.edu/~amaas/data/sentiment/

[2] - Irsoy, Ozan, and Claire Cardie. "Opinion mining with deep recurrent neural networks." *Proceedings of the 2014 conference on empirical methods in natural language processing (EMNLP)*. 2014.

[3] - Dos Santos, Cicero, and Maira Gatti. "Deep convolutional neural networks for sentiment analysis of short texts." *Proceedings of COLING 2014, the 25th International Conference on Computational Linguistics: Technical Papers*. 2014.