Question Answering on SQuAD

Surya Pavan Malireddy, 801042753

Department of Computer Science

Abstract: Natural Language Processing (NLP) enables computers to analyze and understand human language. There are many interesting applications in daily life powered by NLP such as Spam Filtering, Sentiment Analysis, Language Translation, Question Answering (Siri, Google Assistant, Alexa, Cortana). Reading comprehension system is a trending topic in the field of Natural Language Processing. This system can be useful in different domains where the users can get to know answer to a question without the need to read a huge paragraph. In this study report I want to explain the approach and different techniques that are used to build a Question Answering System.

A Question answering system should be able to read a paragraph and answer questions related to it. The dataset I choose to work on for this project is Stanford Question Answering Dataset (SQuAD 2.0) (1). SQuAD is a dataset comprising of more than more than 100,000 question-answer pairs from 500 Wikipedia articles posed by crowdworkers. The answer to a question is a span of text from the related paragraph or the question might not be answerable. To perform well on SQuAD 2.0, the system should not only answer when it's possible but also determine when no answer is supported by the paragraph and abstain from answering. The deep learning model of this system has Embedding Layer, Attention Layer, Attention Layer, Output Layer. Embedding layer represents words as word embeddings using pretrained vectors such as GloVe(5). Encoder layer creates hidden vectors separately for context and questions. Attention layer compares above two hidden vectors to get the answer to a question and the output layer helps to get the start and end index of answer from the context.

References:

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