Project Proposal – Building a Chatbot with Deep NLP

Project Members

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Project Description:

Why chatbot is essential?

Chatbot is one of the most scalable approach a business can take in order to interact with users. If one support representative interacts with 100 customers, then for 100,000 customers we'll need 1000 support representatives. But one chatbot can handle and interact with all the 100,000 customers and cuts lots of costs and efficiency. Deep learning has allowed the complexities within NLP to be easier to model and can be leveraged to build a chatbot which has a real conversation with a human.

Goals and Objective:

Build the Chatbot using Deep Learning, NLP and implement using SEQ2SEQ architecture.

Chatbots are currently the easiest way we have for software to be native to humans because they provide an experience of talking to another person

Project Requirements:

Create virtual environment and install TensorFlow and all the required packages.

Data - **https://www.cs.cornell.edu/~cristian/Cornell_Movie-Dialogs_Corpus.html**

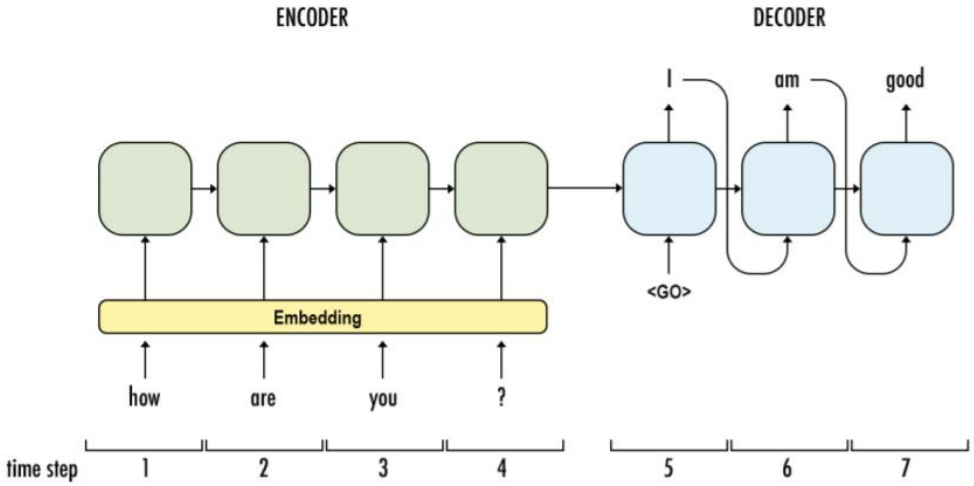
Potential pitfalls & Challenges

I'll document pitfalls and challenges while implementing the chatbot.

Background Research:

- Types of Natural Language Processing
- Classical vs. Deep Learning Models
- End to End Deep Learning Models
- CNN, RNN
- Seq2Seq Architecture & Training

Algorithms and code sources:



Sequence to Sequence model architecture

Sequence to sequence models are based on RNN architecture and consists of two RNNs: an encoder and a decoder. The encoder's task is to process the input, and the decoder to process the output. Sequence to sequence models can be thought of as one decoder node producing output corresponding to one encoder node. This model has straightforward application in machine translation as a corresponding word for the output language can be generated by decoder easily by looking only at one word of input language at a time

RNNs are extensively used for NLP tasks such as translation, speech recognition, text generation and image captioning. shows the comparison between RNN architecture and vanilla feedforward network

Block Diagram of our system

Data Preprocessing (Word Embedding) -> Build SEQ2SEQ Model -> Training SEQ2SEQ Model -> Testing SEQ2SEQ Model -> Tuning

REFERENCES

https://www.aclweb.org/anthology/D15-1166.pdf

https://scholarworks.sjsu.edu/cgi/viewcontent.cgi?article=1645&context=etd_projects