To, IITD-AIA Foundation of Smart Manufacturing

Subject: Weekly Progress Report for Week 6

Dear sir, Following is the required progress report to the best of my knowledge considering relevant topics to be covered.

What's happening this week:

- EDA-Pre-Processing the data i.e., scrapped out from site.
- Tokenization and stemming of messages/questions.

My understanding of INTP23-ML-01: CHATBOT for FSM

Scope: In the Chatbot for Site, I will try to scrape out all important info from website and according to the questions of users , it will provide best possible and accurate answers and it should follow the upcoming check points analyze user queries and understand user messages, provide answers to the messages of the user accurately, provide all information about the updated activities and save their time from searching on website and google search the information, provide answers accurately as much as possible, i.e., instead of providing irrelevant information, its' better to admit that bot is not able to understand the question.

Solution: In this, concept of deep learning either Pytorch or TensorFlow will be used along with some other libraries like Beautiful Soup, and one for scrapping the data on the website or using NLP and deep learning technique of transformer for question answering would increase efficiency of Chatbot. Using data of SQUAD, ROBUSTA model would be my preference.

Approach: Rule-based approach will be used for most common questions like hi, hello, bye. And web-scraping the data in order to give website related answers. For, questions/queries of users; we will use transformer (ROBUSTA model) and SQUAD dataset for pre-training and web-scrapped data of IAFSM site for fine-tuning.

WEEKLY PROGRESS:

Day 30 (July 10- Monday)

Today I learnt about BERT, how it has two steps for getting output, first is Pre-Training which includes further two steps MLM (Masked Language Model) and NSP (Next Sentence Prediction), this step includes

- return token embeddings
- do positional Encoding
- pass to BERT
- Output word vector for MLM and binary value for MSP,
- Word vector passed into Softmax layer

Then there is Fine tuning model, it uses model weights for pre-training phase, how BERT will understand answer/language/sentiment. There will be supervised Learning and hyper parameter training for getting good accuracy.
I tried with fine tuning the model, and increased the epochs from one (1) to three (3). And, also increased the test context by adding more information to it and asked some other questions like "Tell me something about Internship?", "what is IAFSM??", etc.

Day 31 (July 11-Tuesday)

I tried with fine tuning the model, and increased the epochs from one (1) to three (3). And, also increased the test context by adding more information to it and asked some other questions like "Tell me something about Internship?", "what is IAFSM??", etc. Today, again I tried with fine tuning the model, and increased the epochs from one (1) to three (3). And, also increased the test context by adding more information to it and asked some other questions like "Tell me something about Internship?", "what is IAFSM??", etc.

Day 32 (July 12- Wednesday)

Today, I tried to update my json file by entering question along with context and fine tuning the model, and increased the epochs from one (1) to three (3). And, also increased the test context by adding more information to it and asked some other questions like "Tell me something about Internship?", "what is IAFSM??", etc.

Day 33 (July 13- Thursday)

Today, I tried to update my json file by entering question and answers, their starting index, along with context and fine tuning the model, and increased the epochs from one (1) to three (3). And, also increased the test context by adding more information to it and asked some other questions like "Tell me something about Internship?", "what is IAFSM??", etc.

Day 34 (July 14 -Friday)

I changed my code for transformer where I used BERT model already finetuned with squad and providing some text context answers are somewhat better. Now, I realized that we need IAFSM website data context, question and answers for fine tuning. After spending whole day in making the json file in squad format, I got errors in answer _start parameter, then I got to know about haystack annotation tool through YouTube video which does the same work. Now, I will make json file in SQuAD format through tool and then I will fine tune the model with IAFSM dataset.

I made json file in Squad data format Now using haystack annotation tool I will make json file in SQuAD format through tool and then fine tune the model with IAFSM dataset.

Day 35 (July 15- Saturday)

I made json file in Squad data format Now using haystack annotation tool I will make json file in SQuAD format through tool and then fine tune the model with IAFSM dataset.

And fine-tuned the model. However, not able to use that model as its having some errors.

I made json file in Squad data format Now using haystack annotation tool I will make json file in SQuAD format through tool and then fine tune the model with

I successfully fine-tuned the model on IAFSM data and stored it in CPU. Now I need to use to ask questions whether it gives correct answer or something need to be done.

Day 36 (July 16 -Sunday)

While testing the model for question asking, it was providing errors. first it was giving error model must be on same device it is on two (CUDA, CPU) as google collab does not provide much memory for the same. So, for that I switched to VS code and after that this problem got solved as whole model is in CPU. Now, there are some other errors like str does not have detach (), and after changing code there is error that batch size should match 512 dimensions. Now, I will work on solving this. Error.