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ASSIGNMENT NO. 1

Q1. How and where is Facebook using Machine Learning to improve user experience?

A: **1. Language Translation:**

There are people all over the world that use Facebook but many of them also don't know English. Facebook has an in-house translator that simply converts the text from one language to another by clicking the 'See Translation' button. Facebook translator uses Machine learning. All languages are updated monthly so that the ML system is up to date on new slangs and sayings.

2. Targeted Advertising:

We have often seen that whatever we are searching or interested to buy it appears on our news feed as ads. This is done by using deep neural networks that analyze our age, gender, location, page likes, interests, and even our mobile data to profile into select categories and then show ads specifically targeted towards these categories. Facebook also partners with different data collection companies and also uses their data about us to accurately profile you. In this way Facebook get paid by the companies and brand owners to make product reach to their brand-type customer.

3. News Feed:

Some stories show up higher in your Facebook News Feed and some are not even displayed. Different photos, videos, articles, links or updates from our friends, family or businesses we like show up in our personal Facebook News Feed according to a complex system of ranking that is managed by a Machine Learning algorithm. The rank of anything that appears in our News Feed is decided on three factors. Our friends, family, public figures or businesses that you interact with a lot are given top priority. Our feed is also customized according to the type of content we like (Movies, Video games, etc.) Also, posts that are quite popular on Facebook with lots of likes, comments and shares have a higher chance of appearing on our Facebook News Feed.

4. Facial Recognition

Facial Recognition is among the many wonders of Machine Learning on Facebook. It might be difficult for us to recognize our friends on social media but Facebook manage it. When the Machine Learning System analyzes the pixels of the face in the image and creates a template which is basically a string of numbers. But this template is unique for every face (sort of a facial fingerprint!) and can be used to detect that face again in another face and suggest a tag. The use of facial recognition on Facebook works like when someone has uploaded any picture or video that includes you but haven't been tagged. So Facial recognition will work on it to recognize or detect your face out of millions and will send you a notification.

5. Textual Analysis:

The text is an important thing on Facebook and there is a lot of text on Facebook. To understand and manage this text in the correct manner, Facebook uses DeepText which is a text engine based on deep learning that can understand thousands of posts in a second in more than 20 languages with as much accuracy as we can.

But understanding a language-based text is not that easy. In order to truly understand the text, DeepText has to understand many things like grammar, idioms, slang words, context, etc. Because of some complexities, and that too in multiple languages, DeepText uses Deep Learning and therefore it handles labeled data much more efficiently than traditional Natural Language Processing models.

Q2. How do you think deep learning can change the world and do wonders?

A: Deep learning is a subset of Artificial Intelligence. Deep learning is a technology that enables machines to identify patterns in vast amounts of unsupervised data and to recognize images or speech. Deep learning works on the large amount of data. Machines are adept at processing supervised data - for example, the data that engineers manually input into a system to enable it to understand spoken commands. The goal of deep learning is to create machines that learn without the need for human input, such as by identifying the words spoken and the previous data. Deep learning technology can be applied to Self-driving cars, virtual assistance, healthcare, voice detection, face recognition, syncing words to mouth movement, and image recognition.

Q3. What is your dream AI project that can become into reality and can have a commercial value? Justify your answer.

A: I am an undergraduate student of electrical engineering and I would like to utilize my knowledge of power generation to make an AI project. My dream is to make a system that works by taking coordinates of a land, and some measures about demand, cost, utilization, theft, load factor and loss. The following system will help to install grid stations and transmission by taking data of the area. This is more efficient and quick way to install electrical power system in an area. This could make procedures easy for companies like K-Electric, Wapda, Nepra and they can use it to provide electricity in cities or rural areas. This project idea can also be modified for considering different parameters and install the system according to it.