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Assignment # 1

Question # 1: How and where is facebook using Machine Learning to improve user experience?

Answer:

1. Textual analysis: A large of data no Facebook is shared on text. Video may involves larger data in terms of megabytes text can be just a rich part of data. So Facebook uses text in many machine learning algorithms.

One of Facebook key tool developed for text recognition is DeepText to extract meaning from text data set that we post on Facebook in the form of messages, comments and then model learning them by contextually. The model analyzed the relationship between words to understand how their meaning changes depending on other words around them. Because this is semi-supervised learning, the algorithms do not necessarily have reference data – for example a dictionary – explaining the meaning of every word. Instead, it learns for itself based on how words are used.

2. Facial recognition: Facial Recognition is among the many wonders of Machine Learning on Facebook. It might be easy for you to recognize your friends on social media even under he or she look in any condition but how does Facebook manage it. Well if you have your “tag suggestions” or “face recognition” turned on in Facebook this means you have provided permission for Facial Recognition, then the Machine Learning model analyses 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 and can be used to detect that face again in another face and suggest a tag.

So now the question is, why Facebook use facial recognition? Well in case anyone on Facebook can take your picture from anywhere and uploaded photo on Facebook without taking your permission and also misused your photo and tag you in appropriate photo in this case Machine Learning algorithm easily analyze your photo on Facebook due to your previous photos on Facebook and send you a notification on Facebook that someone uploaded or tag you in a photo without taking your permission then you take further step on them that no one can misuse your photo.

Facebook uses a DL application called DeepFace to teach it to recognize people in photos. It says that its most advanced image recognition tool is more successful than humans in recognizing whether two different images are of the same person or not with DeepFace scoring a 97% success rate compared to humans with 96%.

3. Targeted advertising:

You like anything just as cloth brand on Facebook and search related brand on clothes so then after some time you see on Facebook wall related ads of that clothing brand that you search it and like it. The Facebook uses your likes and dislikes and you search related brands of clothes

data and then this data deploy on Machine Learning models. Then this models give an ads on your Facebook wall and you can easily buy clothes of that brand that you search for it.

Facebook uses deep neural networks the foundation stones of deep learning to decide which adverts to show to which users. This has always been the cornerstone of its business, but by tasking machines themselves to find out as much as they can about us, and to cluster us together in the most insightful ways when serving us ads, it hopes to maintain a competitive edge against other high-tech competitors such as Google who are fighting for supremacy of the same market.

Question # 2: How do you think deep learning can change the world and do wonders?

Answer:

In last few decades artificial intelligence progresses rapidly in many complex problems. In artificial intelligence the Deep Learning made rapidly and fasinating progress in the last few years. The Deep Learning is an artificial neural network motivated with the human brain and how human neurons work. The Deep Learning is a mathematical model.

The Deep Learning is changing our daily life and also progresses our life. So the question is why and where Deep Learning is changing and helping in our lives?. The Deep Learning is used in detecting the cancer and also help in other medical fields. The Deep Learning is also making significant role on self autonomous cars and systems. The Deep Learning is provide us is detecting faces and recognizes in short time as compared to classical machine learning models, for this short time recognition we uses in security purposes. The Deep Learning is smartly deployed in robotics and also make robots smart and efficient in their tasks. The Deep Learning is also uses in virtual assistant such as in web browsers which uses natural language processing. In which we speak in real time and at the same time it recognizes our words we speak and give the result in just a few seconds, this is only happening because of Deep Learning model.

Question # 2: What is your dream AI project that can become into reality and can have a commercial value. Justify your answer.

Answer:

The Machine Learning and AI is changing the life of humans and also progresses the daily life of humans. My dream project on AI is many but I discuss some few projects that relates to my field. My field is Telecommunication and if we apply AI into Telecommunications we also increase the revenue of a company and also create a reliability and good customers services.

- **Maintenance and Improve Network Optimization:**

One of the most important ways to give customers what they want is for telecoms to prevent outages. Predictive maintenance enabled by AI is an essential albeit more behind-the-scenes use of AI and machine learning that also improves customer satisfaction. Data-driven insights help companies monitor equipment, learn from historical information, anticipate equipment failure, and proactively fix it.

Another important facet AI assists with is network optimization. A Self Organizing Network (SON) fueled by artificial intelligence can help networks continually adapt and reconfigure based on current needs. It is also beneficial when designing new networks. Since AI-enabled networks can self-analyze and self-optimize, they are more efficient at providing consistent service.

- **Robotic Process Automation (RPA):**

Considering the volume of customers, any individual telecom company deals with daily, every step of every interaction opens the door to human error. By automating business processes through robotic process automation, not only are repetitive and rules-based operations done more efficiently; they are more accurate. In a survey conducted by Deloitte, telecom, tech and media executives confirmed significant investment in cognitive technologies while 40 percent said they experienced substantial benefits and three-quarters of them expect cognitive computing to substantially transformed their companies.

- **Fraud Detection:**

Machine learning algorithms are instrumental in detecting fraudulent activity such as theft or fake profiles, illegal access, and more. These algorithms learn what normal activity looks like so can spot anomalies from enormous datasets much quicker than human analysts can provide nearly a real-time response to activity that needs to be investigated.

- **Data-Driven Business Decisions: Predictive Analytics:**

Telecoms possess enormous amounts of data from customers. With the use of AI and machine learning, telecoms can extract meaningful business insights from this data so they can make faster and better business decisions. This crunching of the data by AI helps with customer segmentation, customer churn prevention, to predict the lifetime value of the customer, product development, improving margins, price optimization, and more.

Ultimately, artificial intelligence and machine learning have enabled the telecommunications industry to extract insights from their vast data sets, made it easier to resolve issues, manage daily business more efficiently and provide improved customer service and satisfaction. The industry provides us with a great example of how adopting AI and machine learning wasn't just beneficial to business; it was essential for each company's survival and ability to compete with competitors.