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Milestone one  
CSS 370

**Q: Explain the basics of neural networks and how they work?**

Neural network is made of different algorithm that mimic human brain. A neural network consists of an input, output and in between layers. These layers are connected with each other through nodes forming ‘network’. A node is made similar to human brain neuron. When the AI is asked to solve a problem, the neurons run through different information to pass it to next neuron. In this way, the neuron compares all the data and provide the closer option. The neural network consists of three types of layers: Input layer, this is the initial stage. Hidden layer is a layers between input and output. Output layer is the result of input. For example, lets look at these layers step by step. In first input layer, the neuron takes the pixel of photograph. This will be passed to middle layer. After it, hidden layer is connected to output. In this example, the output will recognize if the input picture is cat or not. The neurons network is trained in a way to get the probability by running all the stored pictures of the cat. The AI will detect the cat nearly precise human.

**Q: Evaluate how neural networks are used to create personalization**:  
Since the advent of COVID, online shopping becomes popular. Also providing every user their own experience using neural networks. This works in a sense that suggestions can be provided to a specific user by searching its browsing history. According to the article, “An event can be that a user makes a search query, calls up an article page or receives an e-mail. This data forms the basis for working with the following techniques. Therefore the first step is to collect or extract this data. Usually the raw data is already stored on web servers or in databases, which then need to be refined to be usable”. Moreover, each event has its own place in neural networks, known as embedding. Network learns on how to compare and suggest like items. In this project, personalization experience is created by “mouse clicks, site navigation, links followed, time spent on a page, location data, etc.”.

Black box is a system in which inputs and hidden layers are not shown to other users. The most common example of Black box development is Deep learning modeling. The ethical concern using black box is bias. If these situation arise in black box, it will not be identified after a long time. As described in the article, “it may persist long enough for the organization to incur damage to its reputation and, potentially, legal actions for discrimination..……To prevent such harms, it's important for AI developers to build transparency into their algorithms and for organizations to commit to accountability for their effects”.

Q: **Analyze how portions of the GDPR affect personalization**:

GDPR stands for General Data Protection Regulation, which is responsible for privacy and data protection regulations. There are some rules i.e. Rights of individuals: According to GDPR, individuals data cannot be removed/edit. Right to be informed: Businesses are required to provide individuals why they are collecting their information. Right to Ensure: Individuals can request to remove their data. Data Protection Impact Assessment and data breach response: Businesses are required to perform Data protection assessments. Data Protection officer: All business will have to appoint a person as DPO of the businesses.

GDPR focuses to keep consumer interest in mind always. GDPR also have transparency regarding user information. “purpose limitation is a requirement that personal data be collected for specified, explicit, and legitimate purposes, and not be processed further in a manner incompatible with those purposes (Article 5(1)(b), GDPR)”.

**Q: Assess how the GDPR is affecting the company’s practices**

Since my company is checking the user click preferences, one of the legal concerns would be asking user consent. The other thing I would like to add would be asking user likes or dislikes based on suggestion. Collecting data and user consent is one of the main reason for running the website.

Q: **Propose adaptations to the company’s practices to act in compliance with the GDPR**

Today, GDPR is more secured and protects more data, but as the technology is advancing there is more need to protect data. For example, many big tech companies does not ask users before releasing information. Facebook was sued recently for releasing its users data without consent to third parties. This issue led to question all the big companies in tech, like Google, Microsoft, Apple etc.

Source:

<https://computerhistory.org/blog/how-do-neural-network-systems-work/>

<https://towardsdatascience.com/using-machine-learning-to-personalize-user-experience-f5b6abd65602>

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<https://www.experian.co.uk/blogs/latest-thinking/data-quality/what-are-the-most-important-elements-of-the-gdpr/>