4-2 Project One

**Neural Networks**

Neural networks are a subset of machine learning designed to copy the way the human brain processes information. “A neural network is composed of layers upon layer of artificial neurons, all of which generate output until the final output is attained” (Fernandez, 2019). In other words, they consist of three main layers: input, hidden, and output. The first layer (input layer) receives the initial data, which is processed by the middle layers (hidden layers) through weighted connections. Each node, or neuron, in these layers applies a mathematical function to the input, passing the results to the next layer. Finally, the output layer produces the classification or prediction.

**Personalization through Neural Networks**

Neural networks are important in personalizing user experiences by analyzing large amounts of data to identify patterns and preferences. They can recommend posts, friends, and groups based on a user’s behavior, which increases engagement and click-through rates for targeted advertising, as demonstrated on many social media platforms like Twitter and Facebook (Granados, 2016). However, this process raises ethical concerns, particularly to hidden biases. Since neural networks operate as “black boxes,” users cannot see how decisions are made, causing biased outcomes and a lack of transparency.

**How portions of the GDPR affect personalization**

The GDPR has principles that impact data practices, such as transparency, purpose limitation, data minimization, and accuracy:

* Transparency: Controllers must provide information “to data subjects in a concise, transparent, intelligible, and easily accessible form, using clear and plain language” (European Parliament and Council of the European Union, n.d., Art. 12(1)). This improves the visibility and accessibility of data processing practices to users.
* Purpose Limitation: Personal data must be “collected for specific, explicit, and legitimate purposes” (European Parliament and Council of the European Union, n.d., Art. 5(1)(b)). In other words, data collected for personalizing user experience cannot be used for other purposes without further consent, which restricts the flexibility of using this data for evolving personalization algorithms.
* Data Minimization: Under GDPR, only the data necessary for the specified purposes should be collected (European Parliament and Council of the European Union, n.d., Art. 5(1)(c)). This challenges the data collection often used in personalization, where more data might seem better for refining algorithms but is not allowed unless strictly needed for the declared purposes.
* Accuracy: Personal data must be kept accurate and up to date (European Parliament and Council of the European Union, n.d., Art. 5(1)(d)). This ensures that outdated or incorrect data does not affect the personalization process.

These principles can enhance trust and satisfaction, but it also imposes restrictions on how freely data can be used in personalization algorithms.

**How the GDPR is affecting the company’s practices**

The use of neural networks for personalization raises some legal concerns under GDPR. The issues are ensuring transparency and purpose limitation. Completely stopping data collection is not worth it because it impacts our business model. The company's business model is built on personalization algorithms that use data to improve user experiences, which are recommendations for content, friend requests, and targeted advertising. Each of these features is designed to increase user engagement and time spent on the platform, which are directly linked to revenue generation through ads. Instead, we need to adapt our practices to balance compliance and functionality. GDPR has posed a significant challenge for businesses, particularly those relying on personalized user experiences, as it requires explicit consent for data collection and processing (Spillane, 2022). This regulation has led to a loss of active users in different companies and necessitated a rethink in marketing strategies to ensure compliance and maintaining good customer engagement.

**Proposed Adaptations for GDPR Compliance**

To align with GDPR while preserving the personalized user experience, we can implement clear and user-friendly explanations of how data is used in personalization. Next, collect only the data necessary for specific and defined purposes. Establish rules for regularly updating and correcting data to maintain its accuracy. Finally, any data not necessary for these purposes should be eliminated from the collection process. All in all, the company can better align its operations with GDPR requirements while maintaining the core functionalities that offer personalized experiences.

References

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