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| CS 370 Current/Emerging Trends |
| 4-2 Project One |
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**Summary**

Within our social networking company, personalization is very important. We are an industry leader in user experience, and our customers expect their needs to be anticipated. These results are achieved through the collection of data in the form of mouse clicks, site navigation, links followed, time spent on a page, location data, and more. This data is stored and fed into neural networks to establish models for personalization.

The European Union (EU) is concerned these practices are in violation of the General Data Protection Regulation (GDPR) law.

It is my aim to review the company’s data collection and storage practices, identify any violations (if applicable), and recommend changes if needed.

**Neural Network Basics and Personalization**

“Artificial Neural Network is computing system inspired by biological neural network that constitute animal brain. Such systems “learn” to perform tasks by considering examples” (Ognjanovski, 2020). Neural networks consist of three types of layers: the input layer, the hidden layers, and the output layers. The input layer is the data received from the users. The hidden layers are the places where all the computations are done. For example, if we are trying to determine if a photo of an animal is a dog or cat, the photo goes through a hidden layer that may classify the eyes as a dog or cat, then send it to another layer that may classify the nose as a dog or cat, and so on and so forth until it’s placed in its proper classification. Finally, these classifications go into the output layer which produces the results.

A person’s previous visits may predict any future visits. Using neural networks can aid in determining “if the customer did this, then they might want to do this…” This is personalization. Based on these neural networks, suggestions are given which maximize the time spent on the site. It also allows the user to be shown ads targeted at their personal interests. If an ad applies more to a person, then they are more likely to interact with it. Revenue is then generated by these click-thrus.

Data collected within the app and kept for use of the app itself However, when that data is shared with outside parties or data from outside parties is collected, the ethical implications are greater.

Using algorithms and neural networks within a “black-box” can also lead to ethical problems, bias, and security issues. “Black box AI is any artificial intelligence system whose inputs and operations aren't visible to the user or another interested party” (Yasar & Wigmore, 2023). Bias can be introduced unintentionally into algorithms from the chosen dataset or the developers themselves. Within this black box, there is no transparency and therefore no accountability. Flaws within models are susceptible to attacks and without transparency, security risks may never be discovered until it’s too late.

**GDPR Basics, Personalization, and Effect**

The UK’s General Data Protection Regulation (GDPR) aims to give users greater control over their personal data. “Management consulting company, Accenture, has reported that 75% of consumers are more likely to buy from a retailer that offers them a personalized service” (Spillane, 2022).First, a consumer must consent to the use of data.

*Transparency*. A company must make it clear how they are using data. This may not seem like an issue on the surface for personalization. However, if a customer chooses to opt out based on the list of uses of their data, that can be considered a lost customer. It is also a lost data point that can snowball to other customers.

*Purpose Limitation*. Data may be gathered for pre-specified purposes, not archived, and reused for future use. There are always new ways to personalize a user’s experience. Having to receive a user’s consent each time the team wishes to improve the user experience can cause delays and cost more money.

*Data Minimization*. Only the data gathered for those pre-determined purposes may be gathered, not more. The same issues arise as with purpose limitation. The algorithms and uses must be predetermined which can stifle innovation. The other issue is ensuring *enough* data is gathered. Gathering “enough data to offer a service that’s personally suited to the customer invariably makes it harder for businesses to adapt their service to suit a user’s wants and needs” (Spillane, 2022).

*Confidentiality*. Data must be kept secure and confidential to a reasonably expected degree. If third parties are being utilized, it must be guaranteed that they are also following GDPR practices.

Specific legal concerns from the use of neural networks involve a possible data breach, bias within data could cause discrimination which is also against the law.

The business model within our company requires the collection of user data. Personalization plays a major role within the business model. Targeted advertising is the primary way to make money. Without data collection, personalization does not happen, length of stay shortens, and advertising click-thrus become less. All of this results in less profit for the company.

**Proposed Changes**

The primary way to ensure compliance with the GDPR is to get consent from users. This will include describing how the data is collected and used. This will also include consent to use cookies.

Consumers have the “right to erasure” which will make the user seem like a new user each time and “right to object” which will stop all permission required personalization. While this can seem like a step in the wrong direction, it can allow us to focus on users that value the experience and are more likely to engage with the content.

We should focus on data hygiene. This is a good opportunity to “start from scratch” to ensure the data is accurate and up today. “Refining your data hygiene is a good fit with the work to become GDPR compliant, and it will also help to focus on your active customers and prospects and their contact details in your email lists” (Fresh Relevance, 2022).

Becoming GDPR compliant builds trust with existing and new clients. This is a great look for the brand.

Current ways to entice customers to provide data include:

* Discount codes for providing personal information such as emails.
* Layered privacy statements. Clear language on how data is used with more complicated language on a further layer.
* Countdown timers to create a fear of missing out on the benefits of providing personal information (Fresh Relevance, 2022).

Storage of data needs to be evaluated to ensure the security of the consumer is ironclad.

Current practices within our company remain compliant with GDPR as long as *transparency* is prioritized.

**References**

Ognjanovski, G. (2020, June 7). *Everything you need to know about neural networks and backpropagation - machine learning made easy...* Medium. Retrieved March 23, 2023, from https://towardsdatascience.com/everything-you-need-to-know-about-neural-networks-and-backpropagation-machine-learning-made-easy-e5285bc2be3a

Freischlag, C. (2021, August 7). *Using machine learning to personalize user experience*. Medium. Retrieved March 23, 2023, from https://towardsdatascience.com/using-machine-learning-to-personalize-user-experience-f5b6abd65602

Yasar, K., & Wigmore, I. (2023, March 17). *What is black box ai? definition from TechTarget*. WhatIs.com. Retrieved March 23, 2023, from https://www.techtarget.com/whatis/definition/black-box-AI

Spillane, J. (2022, December 8). *How GDPR can undermine personalization and user experience*. Business 2 Community. Retrieved March 23, 2023, from <https://www.business2community.com/customer-experience/how-gdpr-can-undermine-personalization-and-user-experience-02108269>

*Personalization in the age of GDPR*. Fresh Relevance. (2022, September 7). Retrieved March 23, 2023, from https://www.freshrelevance.com/resources/gdpr-personalization/