Discussion “Case Study Data Science Techniques” Unit 5

Discussion Points

Netflix employs a significant amount of data science and storage technologies. These technologies are integral to the company’s technology and services, enhancing the user experience and service quality. However, it is important to note that they also carry inherent risks.

1. How does Netflix use Data Science and storage technologies to enhance its recommendation system?

Netflix uses machine learning to analyze data about users to make personalized recommendations. Popular methods include collaborative filtering, suggesting content based on similar users' preferences, content-based filtering recommendations based on titles like a user's preferences, in addition, technologies like deep learning recognizing complex patterns using neural networks are being used. Other methods include reinforcement learning, adapting recommendations based on user feedback, natural language processing analyzing metadata, subtitles, reviews and synopses to improve search results. Netflix also utilizes distributed storage systems like CDN and Amazon S3 for efficient data storage and real-time data accessibility.

(Sun, 2025)

(Boccio, 2025)

2. Why are NoSQL databases more suited for Netflix’s needs than traditional SQL-based systems?

NoSQL provides horizontal and vertical scalability is essential for Netflix's millions of users. Its dynamism and flexibility enable rapid adaptation to evolving data needs. Availability and fault tolerance are crucial for a globally available service, a key strength of NoSQL systems, while SQL systems face vulnerability to failure. NoSQL has been developed for optimized speed, outperforming SQL in large environments. NoSQL's flexibility extends further, accommodating diverse data models. Relational tables are effective for some users, but not for supporting unstructured data and metadata.

(Đurđić, Zečević, 2025)

3. What challenges might Netflix face with data privacy and ethical concerns, given its reliance on user behavior analytics?

User analysis is being applied by many providers today, including Netflix, and is designed to assemble personalized recommendations and drive engagement. This raises data privacy and ethical challenges, as users may not consent to their personal data being collected and analyzed. Terms and conditions are often accepted without reading them, which can result in privacy laws being breached. This could lead to penalties, legal action, and a loss of trust, as breaches of GDPR

and CCPA are examples of this. Promoting addictive behavior and failing to support healthy habits are both issues that are causing concern. Algorithmic bias has the potential to discriminate against certain groups and restrict diversity. In the present day, when data breaches occur frequently, data leaks pose a considerable threat to private data, which can potentially lead to its distribution on the dark web and may result in identity theft.

(Mbah, 2024)

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