Fast Foods

**Choose one application from that industry. Introduce the industry and application, e.g., healthcare and image reconstruction (100 words)**

Fast food is a dynamic sector that has grown tremendously to satisfy the needs of modern lives. The use of Artificial Intelligence (AI) in personalized menu recommendations is one novel use in this field. Fast-food restaurants use machine learning algorithms to recommend specialized menu selections based on client preferences, order history, and real-time data. This application improves the consumer experience by offering personalized options, expediting the purchase process, and eventually leading to higher customer satisfaction and loyalty. As technology advances, the fast-food business shows how artificial intelligence (AI) technologies may revolutionize client relationships and increase operational efficiency.

**Explain what sort of unstructured data could be used by an AI or Machine Learning algorithm in the area you chose. (200 words)**

A abundance of unstructured data in the fast-food business may be utilized by AI and machine learning algorithms to improve different areas of operations. Customer evaluations and feedback, which are available on internet platforms, social media, and surveys, are an important source of unstructured data. Natural Language Processing (NLP) algorithms can extract attitudes from textual data, detect common themes, and assess overall customer happiness. This allows fast-food restaurants to better understand their customers' tastes, identify areas for improvement, and adjust their menu choices appropriately.

Images and videos are another useful source of unstructured data. Computer vision algorithms may be used to interpret visual data from sources such as social media posts or in-store cameras. Analyzing photographs of client interactions and reactions, for example, can give insights into service quality and aid in the optimization of staff training programmed. Monitoring food-related social media photos may also help identify developing culinary trends, allowing fast-food restaurants to adjust their menus to reflect popular tastes. AI and machine learning algorithms enable the fast-food business to make data-driven choices, improve consumer happiness, and remain nimble in a volatile market by exploiting unstructured data from diverse sources.

**Discuss best practice and options with illustrations (500 words, 5 marks)):**

**a. Accessing/collecting (1 mark),**

**b. Storing (1 mark),**

**c. Sharing (1 mark),**

**d. Documenting (1 mark)**

**e. And maintenance of the data (1 mark).**

**a):-**

Various technologies are used in the fast-food business to access and gather data for AI applications. Using point-of-sale (POS) systems that automatically record transactional data is one recommended practice. Customer orders, preferences, and purchasing history are all included. Furthermore, integrating mobile applications or online purchasing platforms enables the collection of user-generated data such as reviews, ratings, and feedback. In-store sensors or cameras can also collect real-time data on consumer behavior and preferences.

**Illustration:** A fast-food restaurant develops a smartphone app for online ordering. The app gathers information about user preferences, order history, and feedback. The POS system communicates with the app, gathering transaction information. Cameras are carefully positioned throughout the business to observe client interactions and discover popular menu items.

**b. Storage:**

Data storage efficiency is critical for AI applications. Using a strong and scalable database system, such as a cloud-based solution, guarantees that data is safely stored and quickly accessible. It is critical to structure the data in a way that corresponds to the requirements of machine learning algorithms. Implementing appropriate indexing and partitioning strategies aids in reducing retrieval times.

**Illustration:** To securely keep consumer data, the fast-food company uses a cloud-based database. The database is designed to contain transactional data, user-generated content, and visual data in a machine learning-friendly way. To improve data security, regular backups and encryption mechanisms are used.

**c. Sharing:**

Data sharing inside an organization is critical for cross-functional collaboration. By establishing data-sharing protocols and platforms, stakeholders will have access to vital information. APIs (Application Programming Interfaces) enable for the frictionless interchange of data across multiple systems, allowing marketing teams to access consumer insights and chefs to comprehend popular menu items.

**Illustration:** The fast-food company has implemented an internal data-sharing platform that marketing, operations, and culinary departments may use. APIs are used to share data in real time between the POS system, mobile app, and in-store cameras. This enables marketing departments to personalize promotions depending on user choices.

**d. Documenting:**

Data documentation entails producing metadata and documentation that define the nature and context of the stored data. This practice supports in understanding the origin, meaning, and use of the data, promoting cooperation and assuring data quality. Details such as data source, collecting techniques, and any preparation procedures used can all be included in metadata.

**Illustration:** For each sort of data acquired, the fast-food company keeps detailed documentation. Metadata describes the POS system, mobile app, and camera systems, as well as the data fields, frequency of collection, and any data modifications. This material is updated on a regular basis to reflect changes in data gathering procedures.

**e. Maintenance of the Data:**

Regular maintenance is required to guarantee the quality and relevancy of data. Implementing data cleansing techniques to eliminate inconsistencies, updating documentation, and adjusting to changes in consumer behavior or industry trends are all part of this. Continuous monitoring of data storage systems aids in the early detection and resolution of problems.

**Illustration:** The fast-food company implements a periodic data maintenance programmed, which includes frequent data cleansing activities. Inconsistencies are identified and corrected using automated programmed. The company maintains up to current on industry changes and adjusts its data collecting and storage practices accordingly.

**Propose a question that could be asked in relation to your unstructured data and what software might help you to run AI and answer the question. (100 words, 1 marks)**

Question:

"How can customer sentiments expressed in online reviews be analyzed to enhance menu offerings and improve overall customer satisfaction in the fast-food industry?"

**Software:**

Natural Language Processing (NLP) technologies such as the Python package NLTK (Natural Language Toolkit) or spaCy can assist in the processing and analysis of textual data from customer evaluations. To determine the feelings stated in the reviews, sentiment analysis methods such as those given by the TextBlob library can be employed. Furthermore, cloud-based solutions such as Google Cloud Natural Language API and IBM Watson Natural Language Understanding provide pre-built sentiment analysis models, making it easier to extract insights from unstructured textual data.AI and machine learning algorithms help the fast-food industry to make data-driven decisions, increase customer satisfaction, and remain agile in a turbulent market.

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