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Task 1: Data Science Applications Brainstorm

↳ Google maps

Google maps collects the searching locations data from the user and with help of GPS signals to analyze road data. It predicts the routes, time travels. It also provides location based suggestions.

↳ Swiggy

Swiggy uses data science to recommend restaurants & dishes based on the customer searches, past orders and trending items. And it predicts food delivery time by the availability conditions.

↳ Uber

Uber app matches drivers with passengers using real-time data analysis. It predicts ride demand in different locations and adjusting cost based on the distance. And also Uber analyzes the driver profile based on this techniques.

Were used.

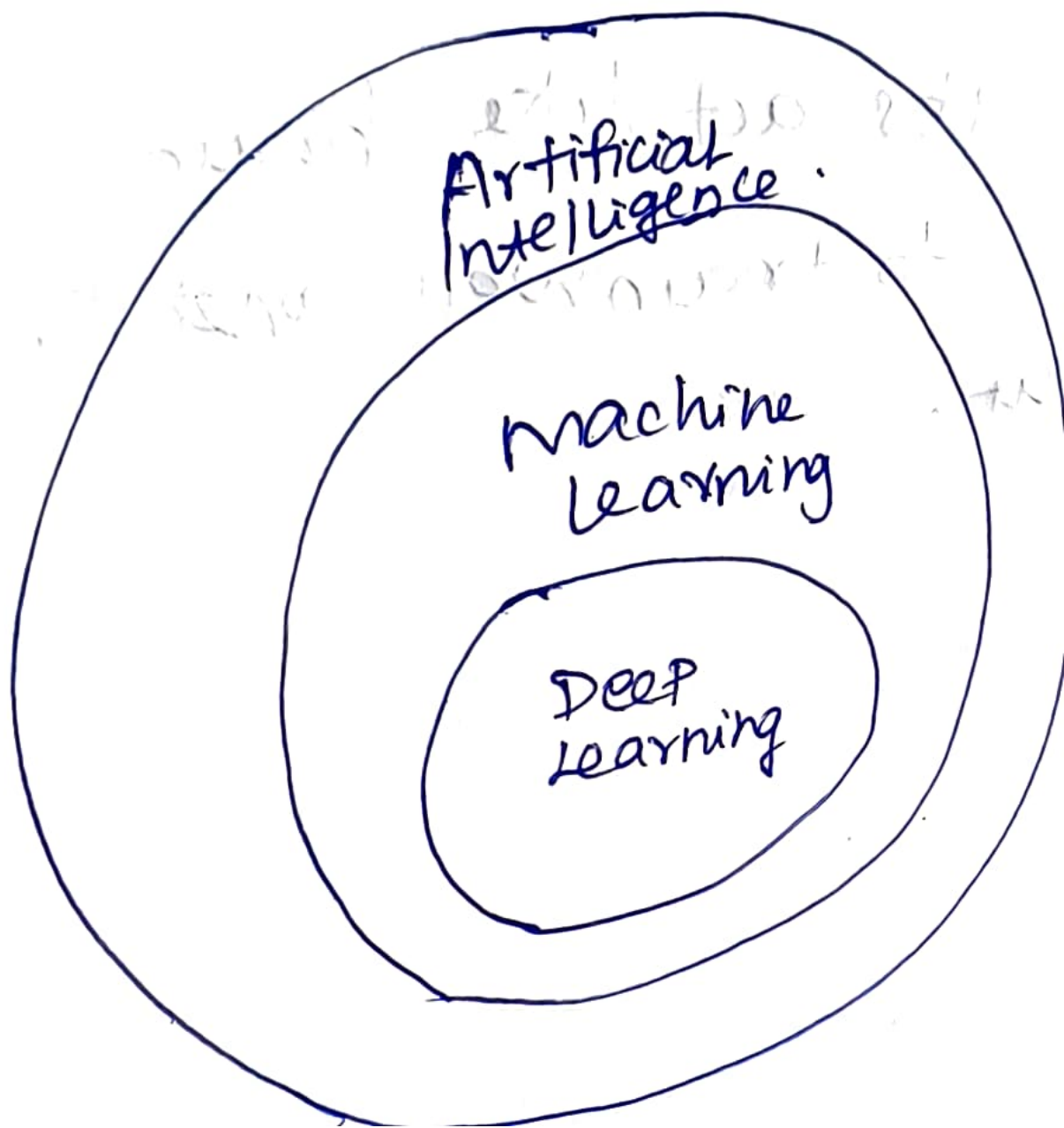
Spotify:-

Spotify tracks the user preferences like genre based on the recently searched content it recommends the used to play the song.

Flipkart

Flipkart tracks the user preferences based on the searching the products based on that it recommends the products.

Task 2: AI, ML, DL Relationship



Artificial Intelligence

Ability to machine to imitate human intelligence, machine were doing the tasks that human smarts like solving problems.

Machine Learning

Algorithms to incorporate intelligence into machine by automatically learn from data. Its like teachers are training the students to perform well.

Deep Learning

Algorithms that mimic human brain to incorporate intelligence to machine, for example its act like brain of the machine to train well and produces the output.

Task 3: Data Scientist Role Research

1, Data Analysis

Data Scientists collect, clean and analyze data to find useful insights that help business and make better decisions.

2, Building Predictive Models

They use machine learning models to create the models that predict future trends, like sales forecasts and customer behavior.

3, Data-Driven Decision making

They present data insights using reports, charts and dashboards to help companies make smart, data-backed choices.

Task 4: Data Science Life Cycle Example

Spotify

Problem definition

Improve the user experience by providing personalized music recommendations based on listening habits.

Data collection

Collects user data, like

↳ songs played, skipped and replayed

↳ User likes

↳ Listening time Day / Night

↳ Genre

Data cleaning & Processing

Removes duplicate or incomplete data

Handles missing songs

Model Training & Evaluation

Uses ML model to train recommendations based on user behavior.

training like suggest songs based
on similar preference

Deployment & monitoring

Integrates the trained model with
Spotify

continuously tracks user engagement
updates and improves recommendations

Task 5: Data Science Ethics Discussion

Ethical concern is data science is data privacy. Companies collect massive amounts of personal data, including browsing history, location & biometric details.

If not handled properly, this data can be misused, leading to security breaches, identity theft, or unauthorized surveillance. Users often share data without fully understanding how it's stored. To ensure the privacy concerns they must follow strict policies, maintaining transparency to individuals' right.

Bonus: Data Science Career Paths.

Data Scientist

Responsibilities

↳ Analyze and interpret complex datasets to uncover trends and insights.

↳ Build predictive models using ML algorithms to solve business problems.

↳ Communicate findings through visualizations and reports to guide decision making.

Required skills

Strong programming skills in Python, R & SQL, ML, data visualization tools like matplotlib.

Career growth

A data scientist can advance to senior data scientist, lead data scientist or become ML engineer.

Data Engineer

Responsibilities

Design, construct & maintain the infrastructure and system that allow data to be collected, stored and accessed for analysis

Build and manage data Pipelines to ensure the efficient movement of data across system.

Required skills

Skills in Python, SQL, databases
Knowledge in Hadoop, Databricks.

Familiarity with data warehousing
And ETL

Career growth

Data engineers can advance to roles like Senior, Team lead