INTRODUCTION

Machine learning (ML) is a type of artificial intelligence (AI) that allows computers to learn from data and make decisions without needing specific instructions. It is becoming essential in many industries because it helps find patterns, make predictions, and automate tasks, leading to better and faster results. As more data is available, ML is making a bigger difference in areas like healthcare, finance, and marketing.

HEALTHCARE

Disease Prediction

Problem Being Solved: One of the most impressive examples of machine learning in healthcare is its usage in disease prediction. ML can help leverage patient's health information to find correlations between various patient's symptoms with an assumed disease. These correlations can help forecast possible health outcomes before any health conditions occur and give doctors an understanding of underlying patterns of disease.

Type of Machine Learning Used: Supervised learning is often employed in disease prediction models, where patient data labeled with specific health outcomes is used to train the model to predict the likelihood of diseases in patients.

Impact of the Solution: Predicting diabetes, liver disease, and cancer at an early stage of development will probably mean that the greatest shift may be found in preventive medicine. A good example here is IBM Watson Genomics that combines cognitive computing with genome-based tumor sequencing to speed up the correct diagnoses of cancer.

FINANCE

Fraud Detection

Problem Being Solved: Fraud prevention is another area where AI can play a role. Security teams use machine learning algorithms to analyze millions of data points and detect fraud as it's happening, as well as prevent it before funds are released from a client's account. This is possible with large neural networks called deep learning, in this case fueled by massive amounts of financial data. A fraud prevention system can look at patterns in incoming transactions and compare them to previous data to determine if something looks odd or suspicious, such as many small transactions.

Type of Machine Learning Used: Deep learning, a type of **Supervised learning**, is used to analyze vast amount of financial data to detect and prevent fraudulent activities.

Impact of the Solution: A fraud prevention system can helps tackle false positives, or false declines, which can happen when an algorithm flags a transaction as suspicious, but there is no actual fraud. With validation and back testing, a fraud prevention system can become more accurate over time, flagging real fraudulent transactions before they occur.

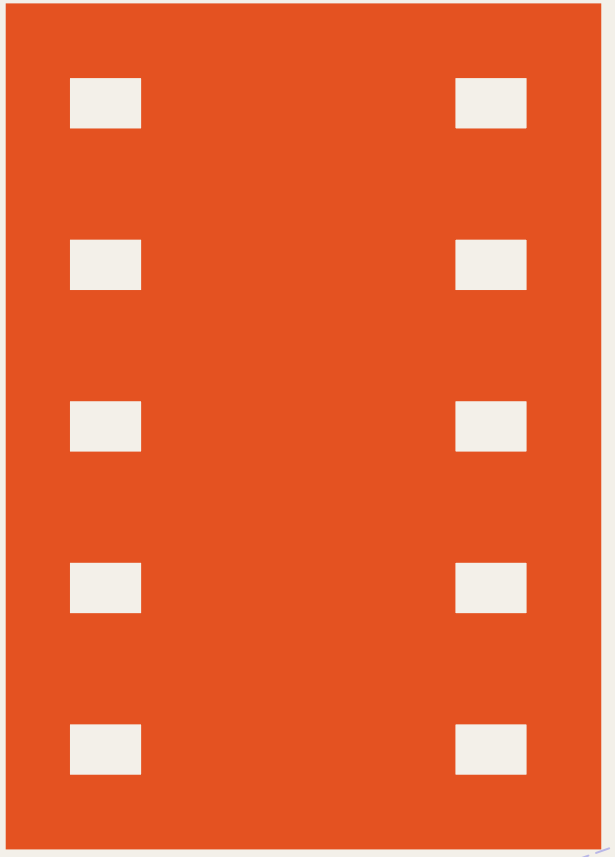
MARKETING

Predictive Recommendation

Problem Being Solved: Recommender systems can be used to surface information that a user may enjoy. For example, if you wanted to find out what movies to watch based on your preferences, or what music to listen to next based on the type of mood you're in, recommender systems can be very useful.

Type of Machine Learning Used: Supervised learning is used to analyze users viewing history and make personalized recommendations for better user experience.

Impact of the Solution: Netflix uses machine learning to predict what you'll want to watch next. If you start watching a movie and get bored, Netflix's AI system will recommend another movie for you. It uses historical data on users' viewing behaviors to make these recommendations. For example, if you watched The Hunger Games, it might recommend Squid Game next. As The Motley Fool reports, Netflix's recommender engine is said to save the firm $1 billion a year through decreased churn and higher retention. In other words, AI is a game-changer for Netflix, and a big part of why they're in the coveted FAANG (Facebook, Amazon, Apple, Netflix, Google) group.



CONCLUSION

Disease Prediction (Healthcare): ML helps doctors predict diseases like cancer or diabetes early by analyzing patient data, leading to better treatment and prevention.

Fraud Detection (Finance): ML identifies and prevents fraud by spotting unusual patterns in financial transactions, making banking more secure.

Predictive Recommendation (Marketing): ML recommends products or content based on what people like, improving user experience and helping companies like Netflix keep customers.