AI in Business

How AI Benefits Businesses and Customers Alike

The evolving nature of businesses

- Businesses are constantly looking for a competitive edge especially in demanding environments such as finance and marketing
- In order to maintain a competitive edge and to speed up processes, businesses turn to technological advances for solutions
- A very notable example is the forklift
    - Heavy loads can be moved with only a single person
    - Forklift is agile enough to move in a limited area
    - Reduces the need of extra labour just to move heavy loads

AI in businesses

- With success stories of data-driven solutions, the demand for data is on the rise
- AI relies heavily on the quantity and quality of data utilised to train its model
- Different AI techniques can be applied onto problems of different business domain:
    - K-Nearest Neighbours: recommender systems on e-commerce platforms such as Lazada, Shopee, Zalora
    - K-means: anomaly detection by clustering method
    - Support Vector Machines: spam email classification
- With these successful examples, more and more business are rushing to adopt AI in their business approach

Advantages of Adoption of AI in Business

https://www.datamation.com/artificial-intelligence/artificial-intelligence-in-business.html

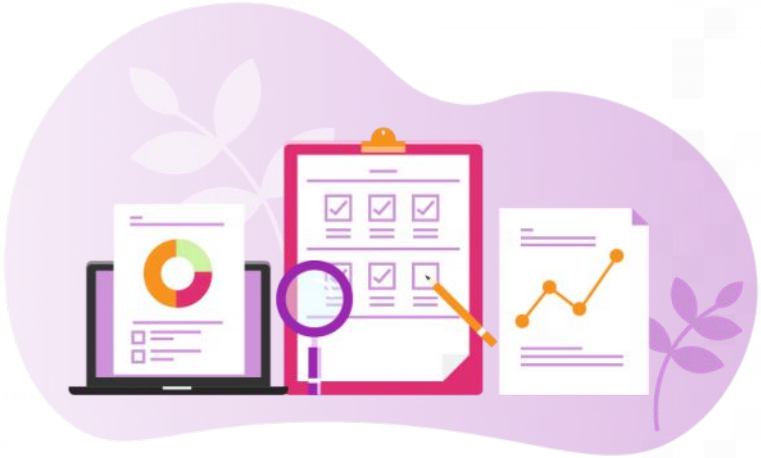
AI in Business

Retail Customer Analytics

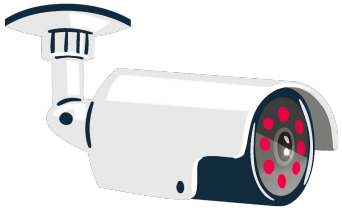
Business Application 1: Retail Customer Analytics

Problems Faced

- Customer data collection is important in the retail store for further data analytics.
- For example, such data can be used for retailers to understand their customers better and for in product recommendation systems to provide personalised product recommendation and services to customers.
- However, such data collection involves a lot of manual work as manual labour is often needed to record customer data such as age and gender.

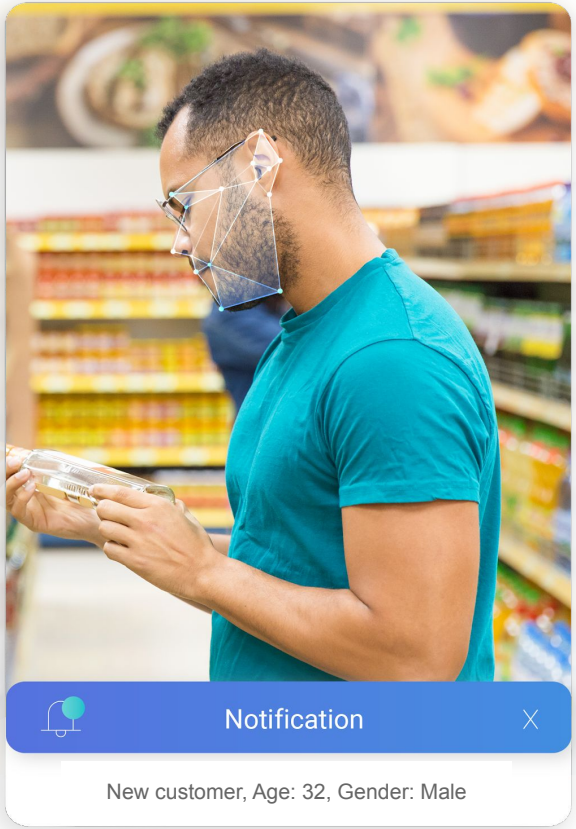


Source: https://www.jotform.com/data-collection-methods/

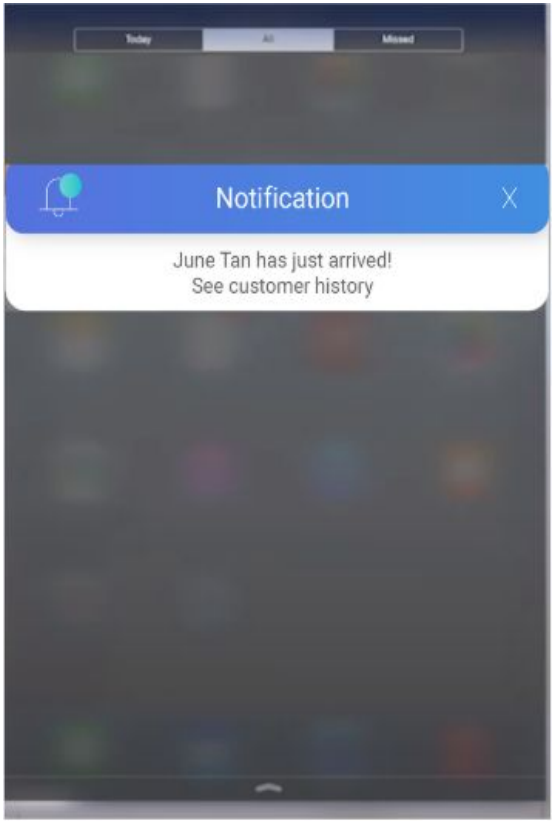


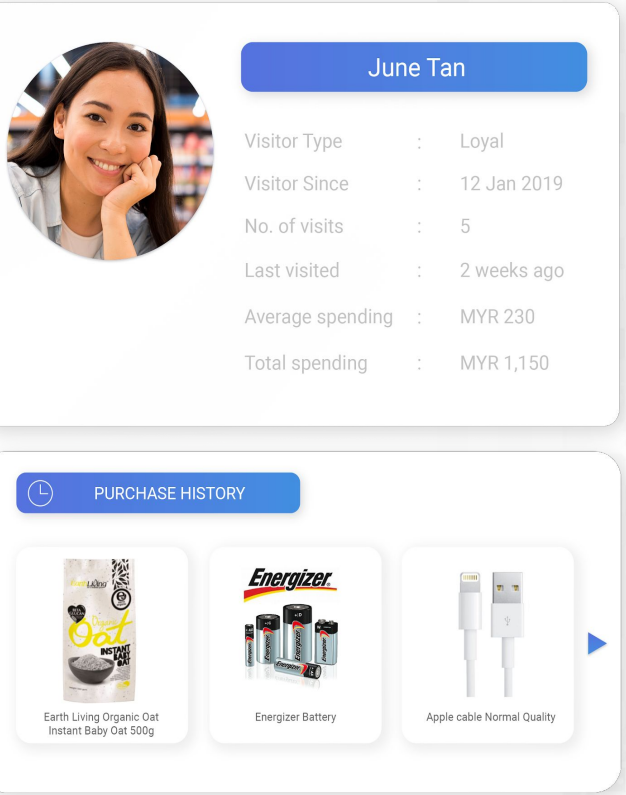
- Recognize existing customer faces and predict customers' age and gender using Computer Vision
- Store customer images and demographics info: Age and Gender
- Detect customer once they enter the store and recognize store members and non-members

- Know who visited a few times but still didn't buy and totally new customer
- At checkout, will scan customer face and create new account for them, and will get recognized during his next visit



- Link customer ID to purchase transactions
- If customer re-visits store, retailer will know customers' profile, purchase history and average spending
- More insights means sales assistant can make best possible recommendation and make more sales
- Retailer can customize service to different customer type to give different shopping experience





Automated and staffless retail store

AI in Business

Retail Product Recommendations

Business Application 2: Retail Product Recommendation

AI modelling to provide unique experience and personalization for each customer will be based on hybrid approach of two algorithms.

Content-based Recommendation

+

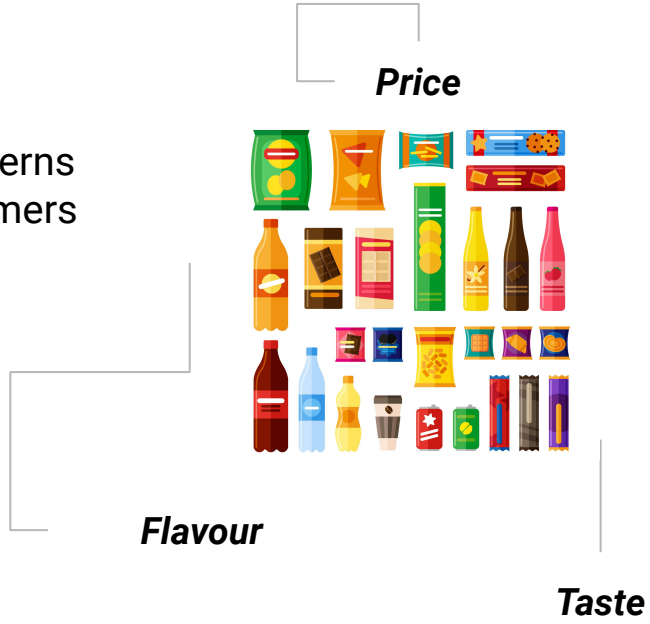
Collaborative Filtering

Content-based Recommendation

- Recommend products based on similar products
- Can be leveraged together with the patterns of purchasing records from loyal customers

"Jack likes product A. He might also like product C which has a similar taste"

* In this case, the AI should learn a good representation of all the **products**



Collaborative Filtering

- Recommend products based on similar customer
- Require extensive amount of data to find out the patterns of preferences

“Jack is similar to Peter in many ways. Peter has always been a fan of Product J. Perhaps Jack will like Product J too.”

* In this case, the AI should learn a good representation of all the **users.**

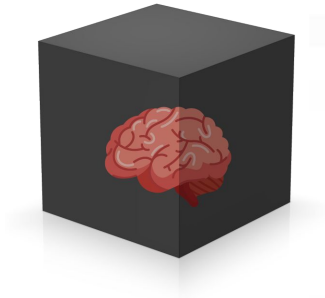
Product Recommendation System

Building of comprehensive AI models based on customer database.

Content-based Recommendation + Collaborative Filtering

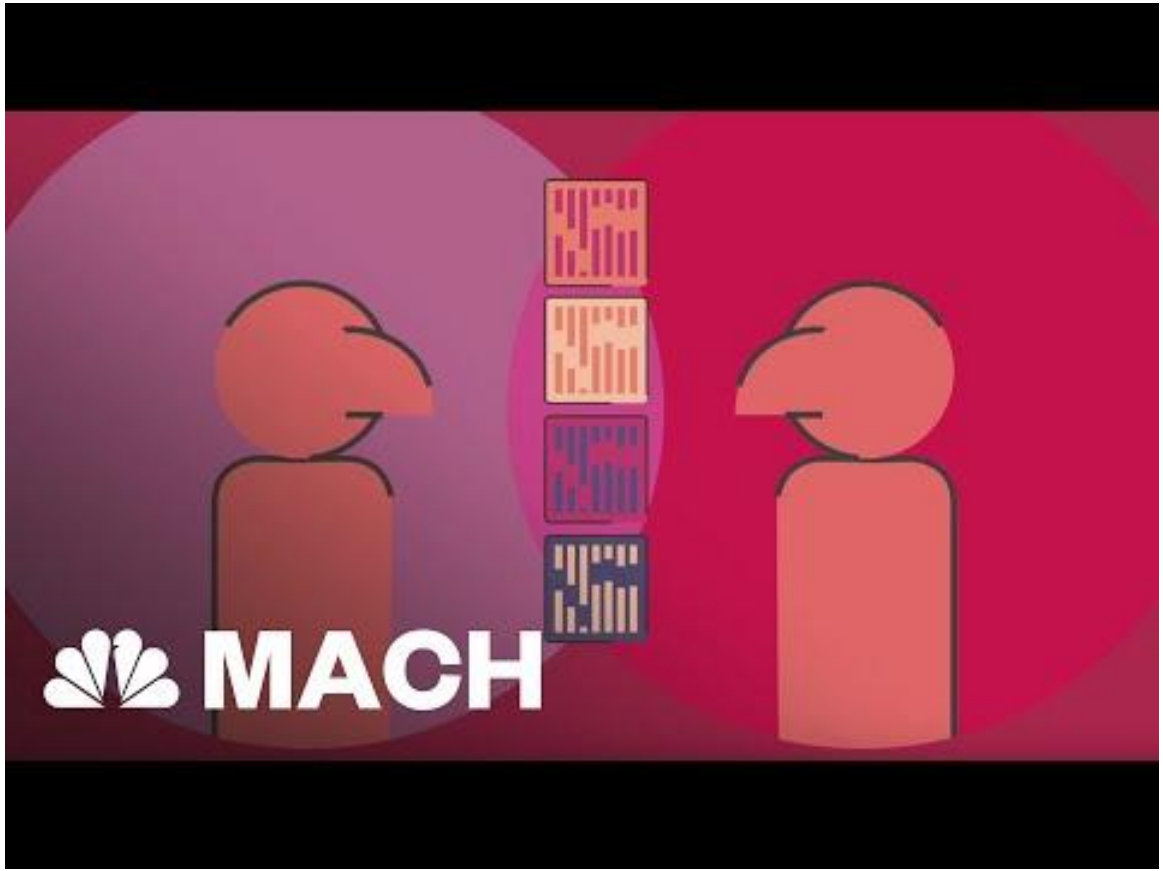
Carried out on:

- Customer purchase data
- Customer survey forms
- Customer reviews



AI Based Personalization

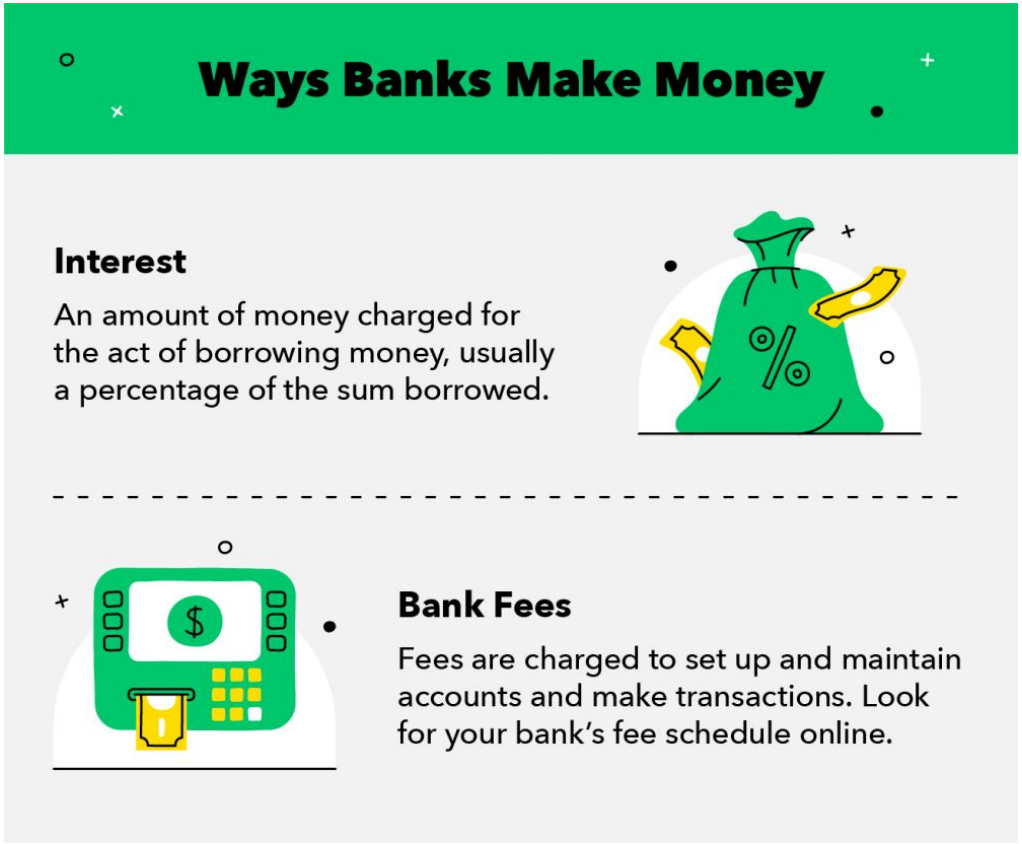
Movie Recommendation in Netflix



AI in Business

Bank Loan Risk Analysis

Business Application 3: Bank Loan Risk Analysis



Source: https://mint.intuit.com/blog/money-etiquette/how-do-banks-make-money/

Business Application 3: Bank Loan Risk Analysis

Problem:

The retail loans team of Bank A was seeing 0.45% of net loan losses, and were unable to further cut those losses with traditional machine learning solutions.

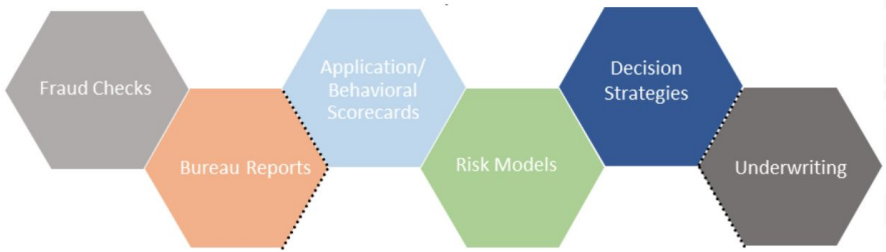
Solution:

Bank A decided to build a predictive model using **reinforcement learning** and Deeplearning4j:

- to train an autonomous agent that would recommend whether or not the bank makes a loan to a given applicant
- model decides based on their application, publicly available metadata, macroeconomic data and profile similarities with other borrowers.

Result:

First phase resulted in cutting their loan loss by 20% and targeting to cut the loan lost by 50% in the next phase.



Lending Risk Prediction