Restaurant Recommendation System

Univ.AI

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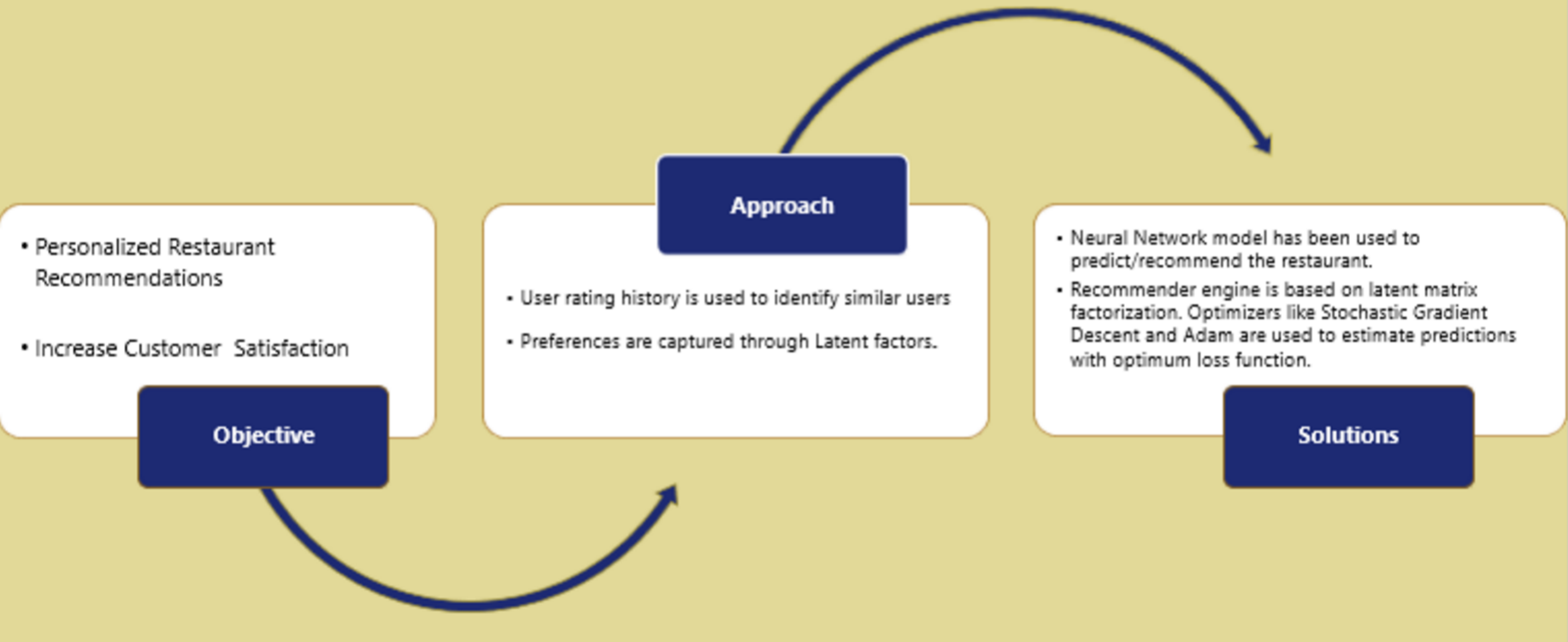
About the Data Set

Yelp is a business directory and review forum, as well as an online reservation service called Yelp Reservations. In addition, the organization instructs small companies on how to respond to reviews, arranges social events for reviewers, and gives statistics about businesses, such as health inspection scores.
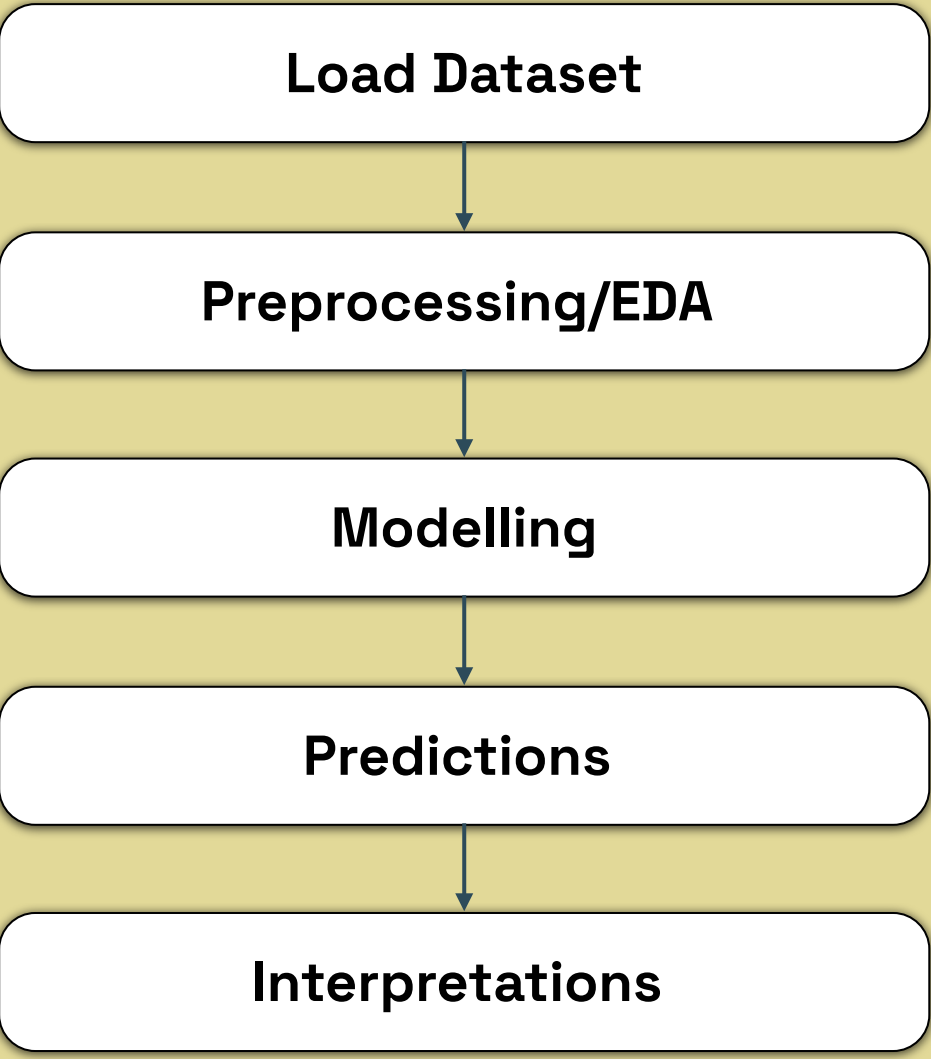
Business Problem

- Customers anticipate more customized suggestions and rely on word-of-mouth referrals.
- The goal of our project is to build recommendation engine to recommend restaurants to yelp users

Analytical Problem

Workflow

- Load Dataset
- Preprocessing/EDA
- Modelling
- Predictions
- Interpretations

Modelling Results

```
model.optimizer.lr=0.001
model.fit([trdf.user_id, trdf.business_id], trdf.stars, batch_size=100000, epochs=1,
          validation_data=([valdf.user_id, valdf.business_id], valdf.stars))

38/38 [==============================] - 27s 699ms/step - loss: 33.3337 - val_loss: 33.3323
<keras.callbacks.History at 0x7f1dcf0cd790>
```
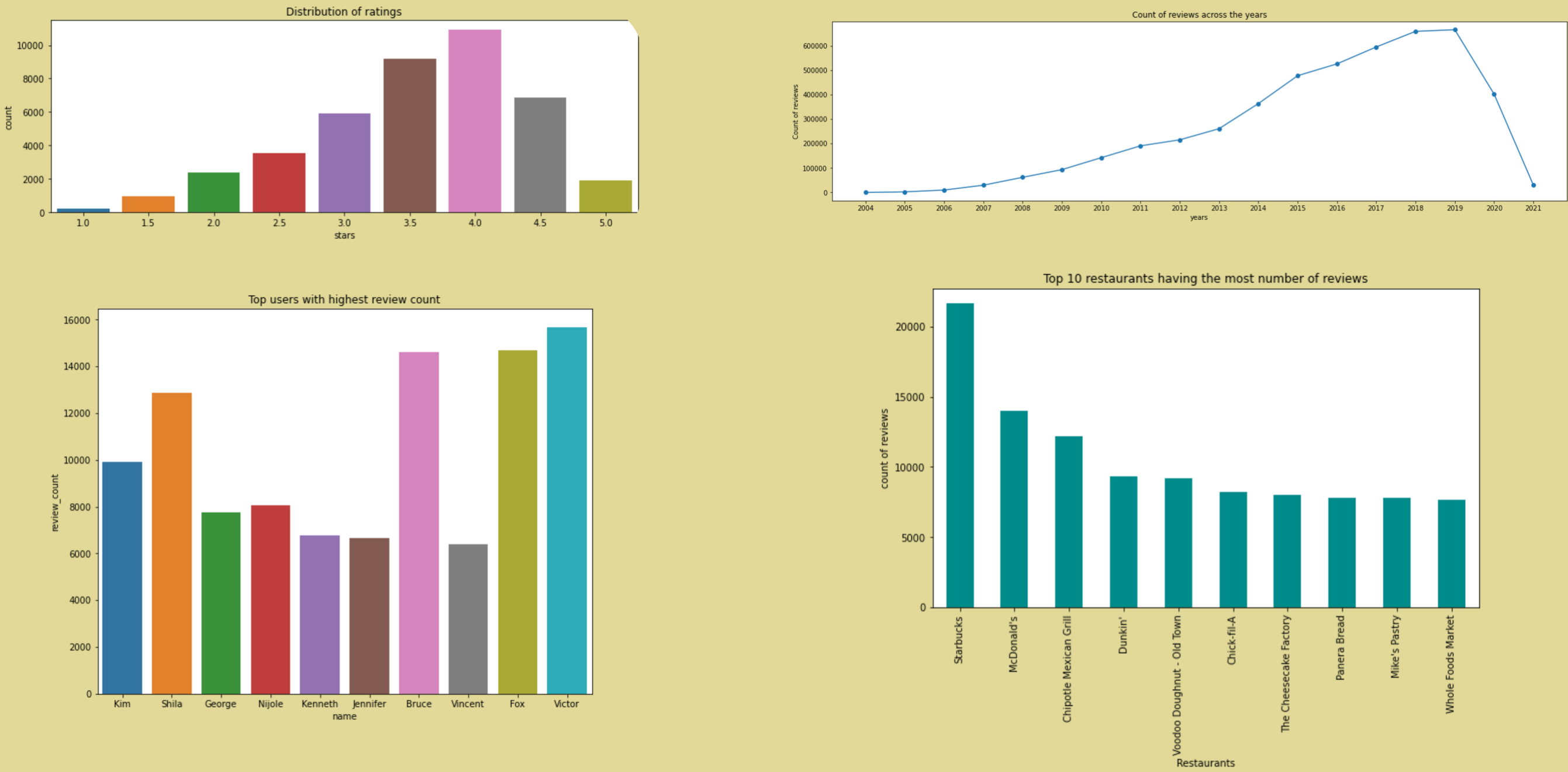
```
model_updated.optimizer.lr=0.001
model_updated.fit([trdf.user_id, trdf.business_id], trdf.stars, batch_size=100000, epochs=1,
          validation_data=([valdf.user_id, valdf.business_id], valdf.stars))

38/38 [==============================] - 32s 821ms/step - loss: 1.3402 - val_loss: 1.5216
<keras.callbacks.History at 0x7f23d9c3d3d0>
```

Future Work

In the future, we can explore a hybrid model where we combine both content based filtering and collaborative filtering methods to leverage the item related information that we already have.

Exploratory Data Analysis

Recomendations Output

business_id	name	address	city	stars	latitude	longitude	predicted_ratings
0	16701	Su-Chang's Restaurant	373 Lowell St	Peabody	4.0	42.536944	-70.955841	4.0
1	24895	Toscana's Ristorante	3 Bourbon St	Peabody	4.0	42.545840	-70.979847	4.0