PREDICTING CUSTOMER BEHAVIOR IN DVD RENTAL USING DEEP LEARNING WITH AWS DEPLOYMENT

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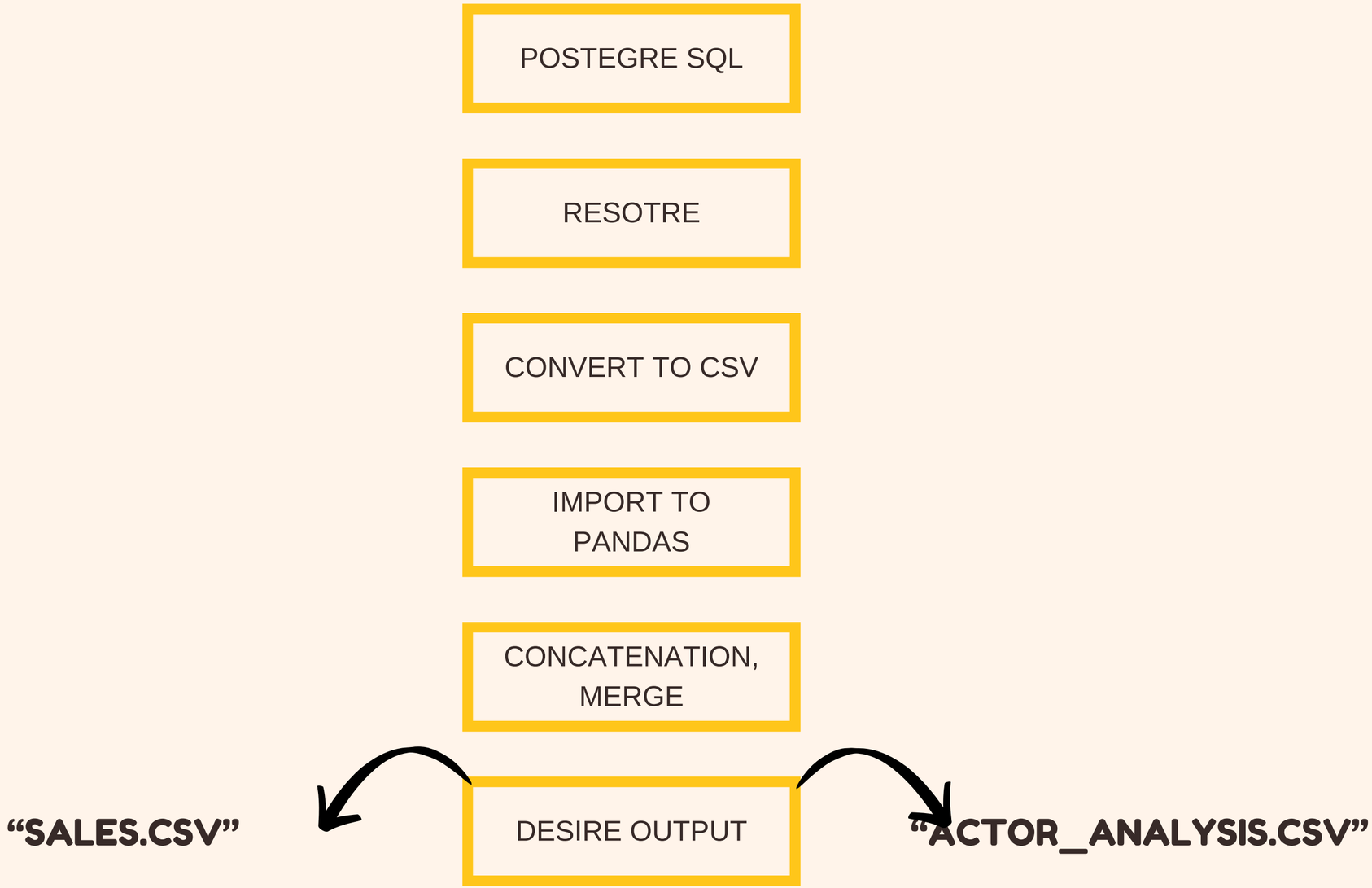
PROBLEM STATEMENT

1.DEMAND PREDICTION

2.RECOMAND GENER TO CUSTOMER(RECOMANDATION SYSTEM)

DATA PROCESSIN



1.DEMAND PREDICTION

1. **Data Processing:** We used historical sales data to filter and select relevant columns, such as date and store details, necessary for demand forecasting
2. **Model Choice:** A Gradient Boosting algorithm was chosen for demand prediction. The model inputs are Store ID, Category Name, and Date.
3. **Deployment:** The model was deployed on a Streamlit app to forecast inventory demand for the next three days.

2.RECOMMENDATION SYSTEM

1. **Customer Matrix Preparation:** "We created a customer-item interaction matrix."
2. **Autoencoder for Recommendations:** "An autoencoder was used for clustering customers and recommending movie genres based on preferences."
3. **Deployment:** "The model, after clustering, was deployed on Streamlit to provide genre recommendations to users."

STREAMLIT APPLICATION

1. **Demand Forecasting Module:** "The Streamlit application displays the predicted demand for DVDs in each category for the next three days, helping stores optimize inventory."
2. **Recommendation Engine:** "Users receive actor and genre recommendations to boost retail sales based on clustering algorithms."

CHALLENGES FACED

1. **Data Scarcity:** "Limited historical data resulted in lower model accuracy. Ideally, we need at least 2-3 years of data."
2. **Missing Customer Demographics:** "The absence of key customer demographics such as gender, education, and age impacted recommendation precision."

LEARNINGS FROM THE PROJECT

1. **Efficient Data Handling:** Worked with multiple CSV files and learned how to properly merge and concatenate them while fetching data from PostgreSQL databases.
2. **Understanding Retail Data:** Developed a deeper understanding of the retail industry, particularly in areas such as customer recommendations and data-driven decision-making.
3. **Mastering Machine Learning Techniques:** Gained proficiency in both supervised and unsupervised learning techniques, applying them to the same dataset to achieve better insights.
4. **Multiple Model Development and Deployment:** Created and deployed multiple models on the same application to provide various predictive insights, such as demand forecasting and recommendations.

THANK YOU