Name – Alamin Seikh

Roll no – 19

Date – 5/11/25

A Decision Tree is a type of supervised machine learning algorithm that is used for both classification and regression tasks. It works by splitting the data into subsets based on the value of input features. This splitting process is repeated in a recursive manner, creating a tree-like structure where each internal node represents a test on an attribute, each branch represents the outcome of the test, and each leaf node represents a class label (in the case of classification) or a predicted value (in the case of regression).

Salary Analysis Report

This report summarizes the analysis of the provided salary dataset, which includes information on company, job title, degree, and whether the salary is above $100,000.

Data Overview:

- The dataset contains 16 entries and 4 columns: 'company', 'job', 'degree', and 'salary_more_then_100k'.
- There are no missing values in the dataset.

Key Findings from Data Visualization:

- **Overall Salary Distribution:** The distribution of salaries above and below 100,000appearsrelativelybalancedinthisdataset.***Companyvs.Salary:**Facebook showsahigherproportionofemployeesearningover100,000 compared to Google and ABC Pharma.
- **Job Role vs. Salary:** Business Managers and Computer Programmers seem to have a higher likelihood of earning over 100,000,especiallyatcertaincompanies.***Degreevs.Salary:**IndividualswithaMaster′sdegreeappeartohaveahigherchanceofearningover100,000 than those with a Bachelor's degree.

Predictive Modeling (Decision Tree):

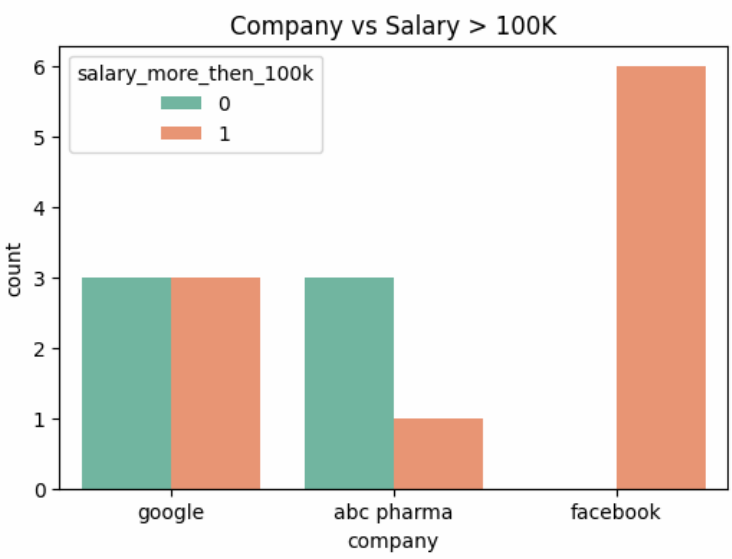
- A Decision Tree Classifier was trained to predict whether a salary is more than $100,000 based on company, job, and degree.
- The model achieved an accuracy score of 1.0 on the training data, indicating it perfectly classified all the instances in the training set. **Note:** This high accuracy on a small dataset might suggest overfitting, and the model's performance on unseen data could be lower.
- Based on the model's predictions:
    - A Google employee with a computer science job and a Master's degree is predicted to have a salary greater than $100,000.

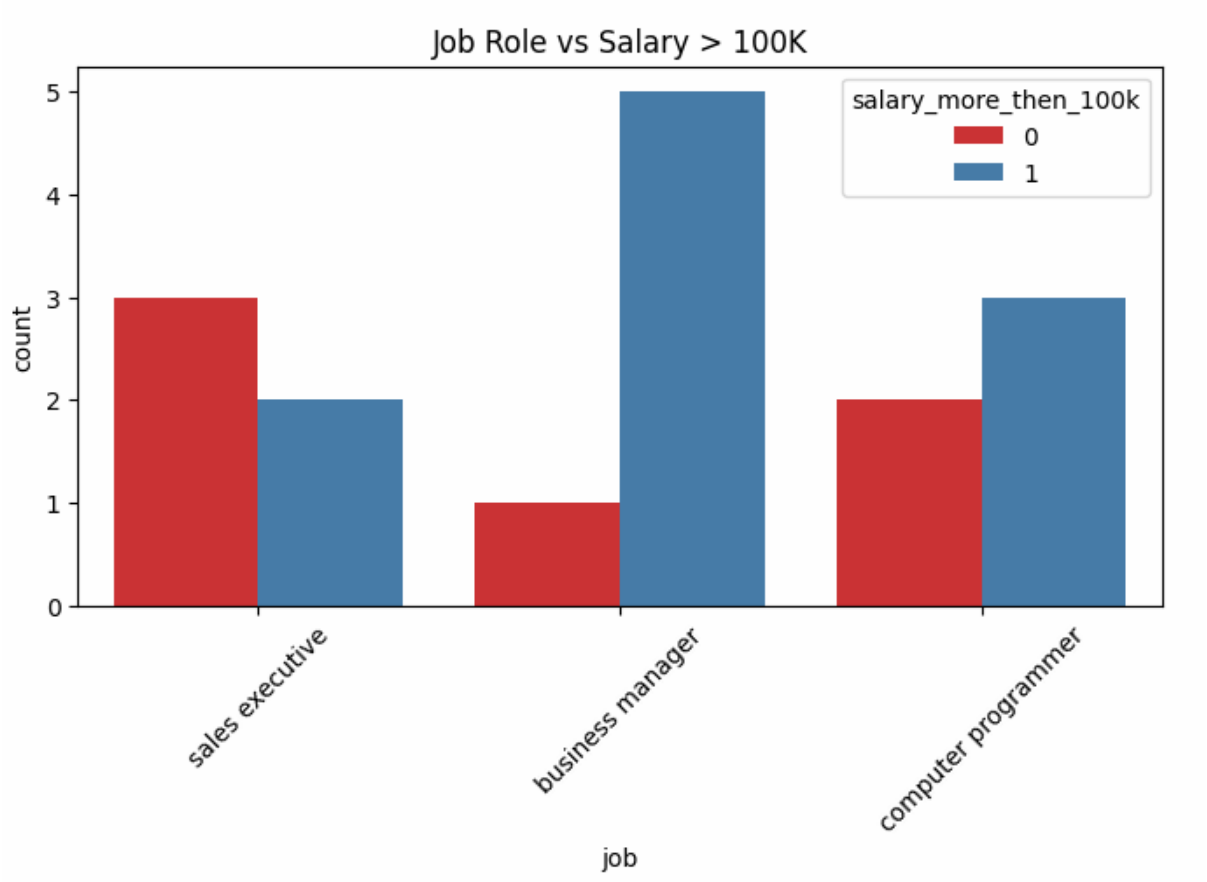
- A Google employee with a computer science job and a Bachelor's degree is predicted to have a salary not greater than $100,000.

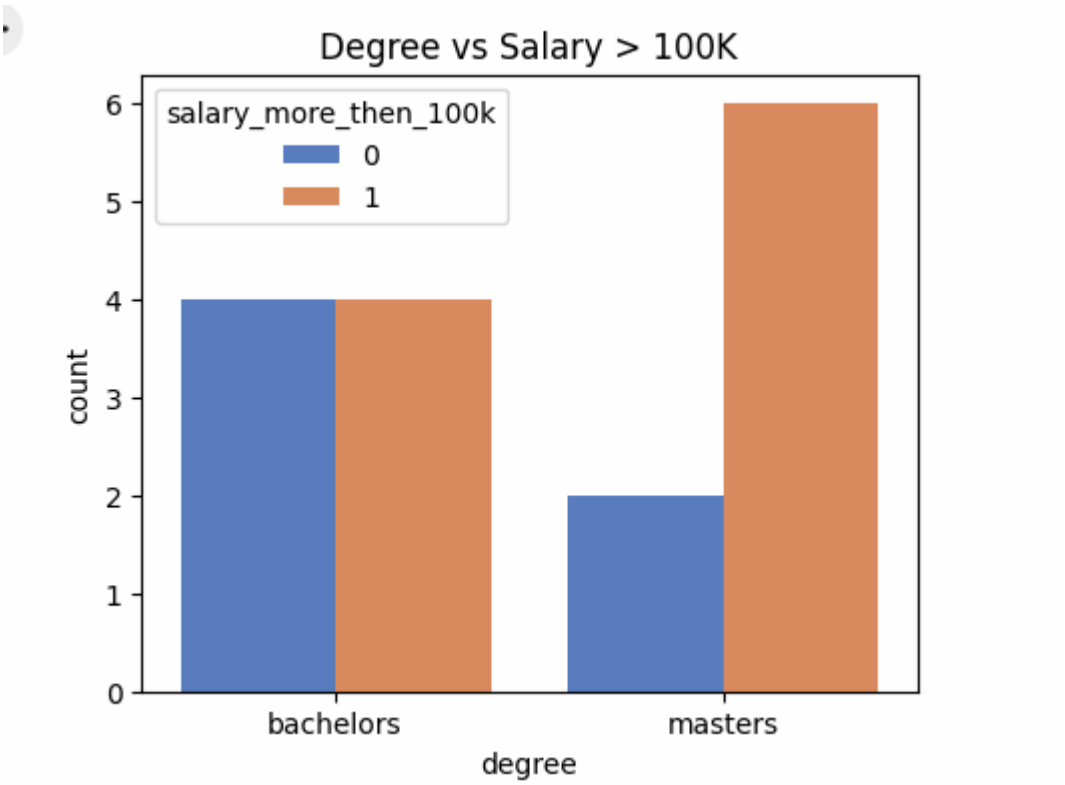
Conclusion:

The analysis suggests that company, job role, and degree all play a role in determining whether an individual's salary exceeds 100,000inthisdataset.Facebookandcertainjobroles(BusinessManager,ComputerProgrammer)appeartobeassociatedwithhighersalaries.AMaster'sdegreealsoseemstoincreasethelikelihoodofearningover100,000.

While the Decision Tree model shows perfect accuracy on the training data, further evaluation with a separate test set is recommended to assess its generalization performance.




Job Role vs Salary > 100K
salary_more_then_100k
0
1
count
0
1
2
3
4
5
sales executive
business manager
computer programmer
job


Degree vs Salary > 100K
salary_more_then_100k
0
1
count
0
1
2
3
4
5
6
bachelors
masters
degree