CAPSTONE PROJECT

Employee Salary prediction using Machine learning algorithms

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OUTLINE

- **Problem Statement**
- **System Development Approach**
- **Algorithm & Deployment**
- **Result**
- **Conclusion**

Problem Statement

- Organizations often struggle to create fair and competitive salary structures due to inconsistent compensation practices.

- These inconsistencies can result in salary discrepancies and perceptions of unfairness among employees.

- Unclear or non-transparent salary decisions can further contribute to employee dissatisfaction and reduced morale.

- Ultimately, unresolved salary structure challenges can negatively impact organizational performance and reputation.

- As a result, organizations face difficulties in attracting and retaining top talent, leading to recruitment and retention issues.

System Approach

The "System Approach" section outlines the overall strategy and methodology for developing and implementing. Here's a suggested structure for this section:

- System requirements
- Library required to build the model

System requirements

Hardware Requirements

- Processor: Intel Core i3 or above (recommended: i5/i7 for faster processing)
- RAM: Minimum 4GB (recommended: 8GB or higher)
- Storage: At least 1GB free disk space for datasets, libraries, and project files
- Operating System: Windows 10/11, macOS, or any major Linux distribution

Software Requirements

- Browser: Chrome, Firefox, Edge, or Safari to run Jupyter Notebooks
- Package Manager: pip or conda (for Python library installation)

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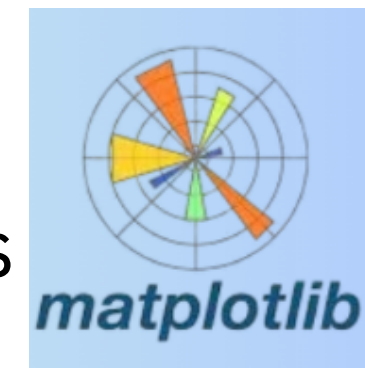# Library required to build the model

PANDAS:

Pandas is a Python library for data evaluation

Matplotlib :

Matplotlib is a widely used for creating visualizations

Scikit-learn:

generate complex diagrams or flowcharts of its internal processes

Algorithm & Deployment

Step-by-Step Procedure to Complete an Employee Salary Prediction using different machine learning alogrithms :

1. Data Collection and Loading

   - Import necessary libraries (such as numpy, matplotlib).
   - Load the dataset ("adult 3.csv") into a pandas DataFrame for analysis

2. Data Exploration and Preprocessing

   - Examine the dataset to understand feature types and identify missing or inconsistent values.
   - Address missing values appropriately (e.g., imputation or removal).
   - Encode categorical variables using suitable techniques (like label encoding or one-hot encoding) to prepare the data for machine learning algorithms.

3. Feature Selection and Engineering

- Identify and select the features most relevant to predicting the target variable (income category).
- Engineer or transform features as needed to enhance the predictive power of the dataset.

4. Data Splitting

- Split the dataset into training and testing subsets to allow for proper model evaluation and to avoid overfitting.

5. Model Selection and Training

- Choose an appropriate algorithm for classification (such as logistic regression, decision tree, or random forest).

- Train the selected model on the training data.

6. Model Evaluation

- Evaluate the model's performance on the test set using metrics like accuracy, precision, recall, or F1-score.
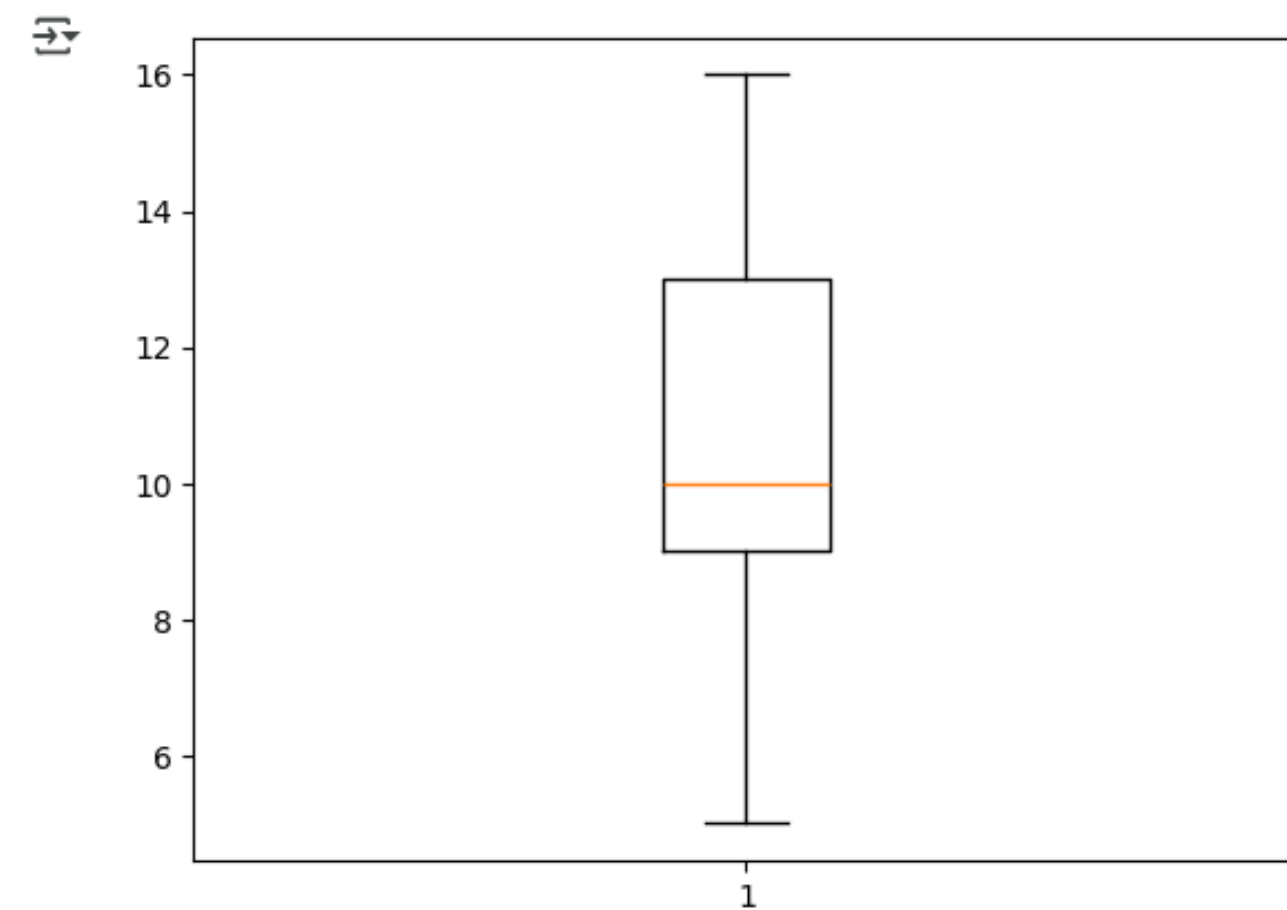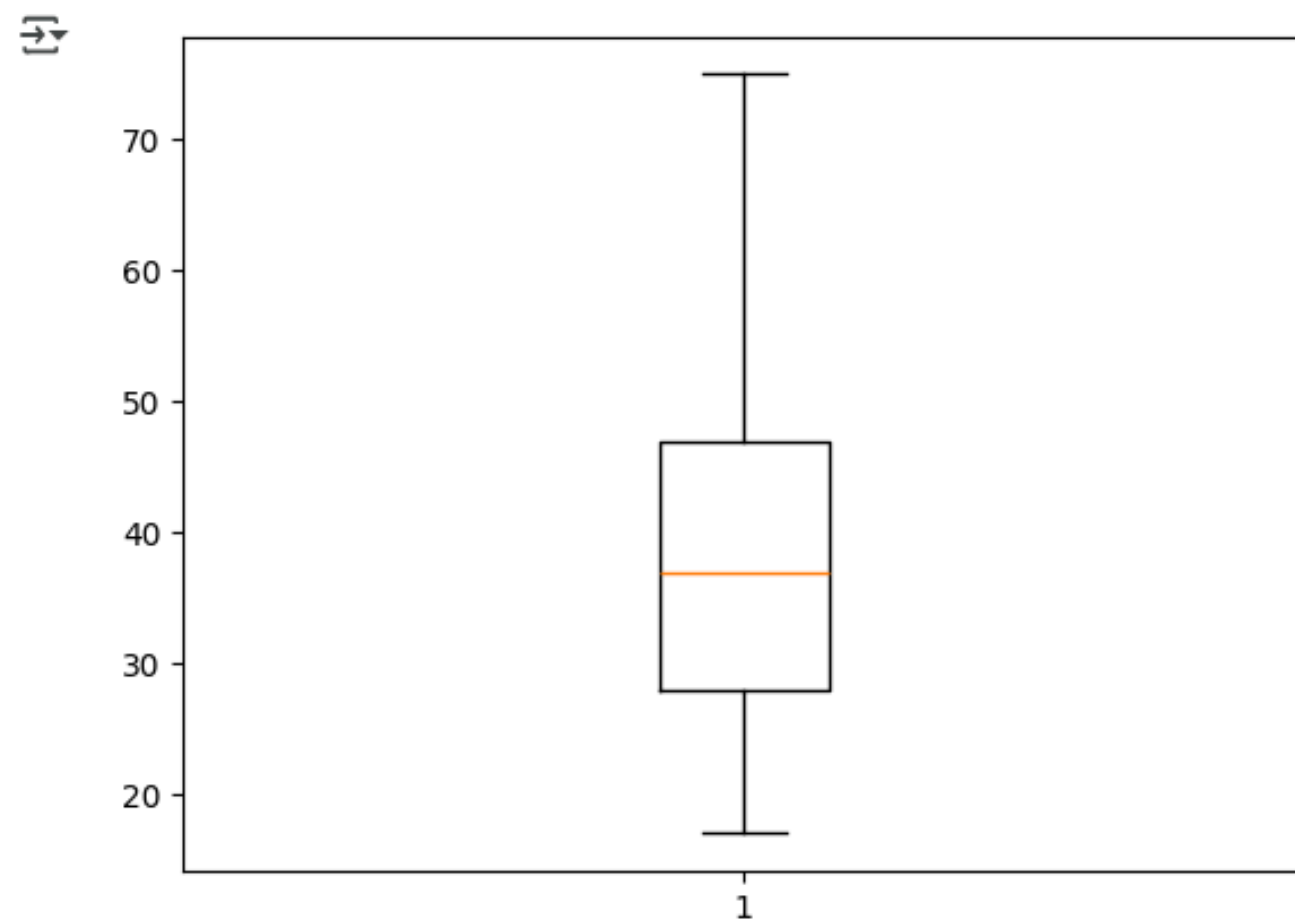- If needed, perform hyperparameter tuning to improve performance.
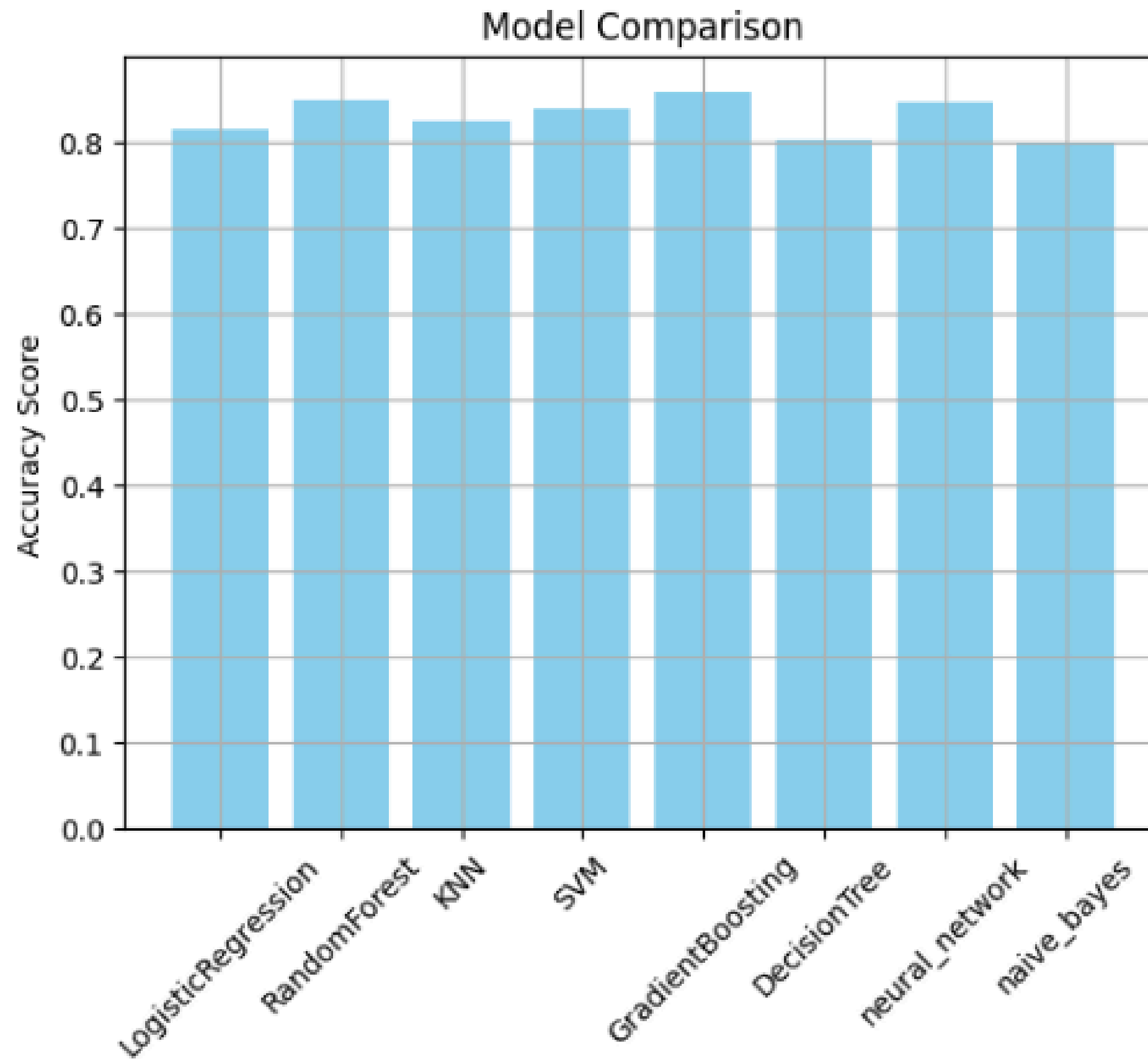
7. Deployment and Reporting

- Use the trained model to predict the salary category of new employee data.
- Document the entire process, the insights gained, and the model's results in a clear and structured report.

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Result

After Outliner detection

Model Comparison

Github Link :

https://github.com/seshadri-07/Employee_Salary.git

Conclusion

The implementation of the Salary Prediction System , I addressed one of the major concerns in the current workforce.By analyzing employee data and applying machine learning techniques, I developed a system that can predict fair and competitive salaries based on various attributes such as age, education, and role.

This approach enables organizations to offer salaries aligned with market expectations and employee capabilities, helping to reduce turnover and improve satisfaction. Ultimately, implementing such a predictive system can lead to better retention, more motivated employees, and a stronger competitive position for the company.

THANK YOU
– Seshadri Reddy