

# EMPLOYEE SALARY PREDICTION APP

**(A Machine Learning-Based Web Application)**

**Presented By :**

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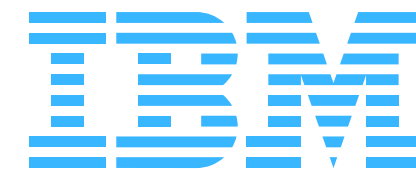
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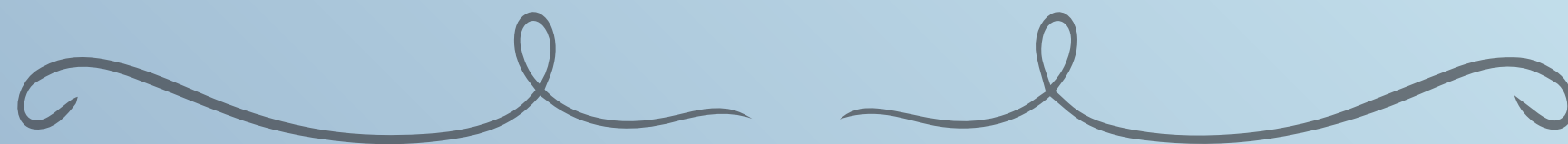
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**Under the Guidance of :**

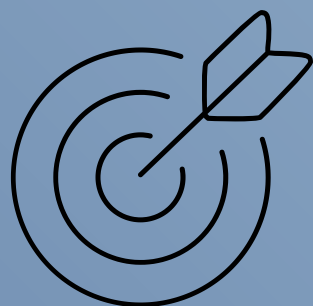
Ms. Naina Devi

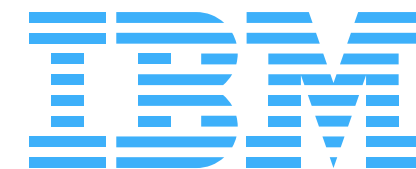


# INTRODUCTION



- Employee salary depends on factors like experience , education , job role etc. 
- This project demonstrates prediction using Linear Regression. 
- Machine Learning helps in predicting salaries more precisely. 
- Traditional estimation is slow and not always accurate.





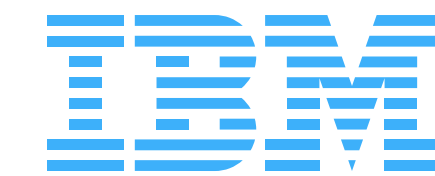
# OBJECTIVE



- To minimize manual effort and reduce errors in salary estimation
- To analyze the relationship between employee experience and salary using Linear Regression.
- To improve prediction accuracy by using structured data



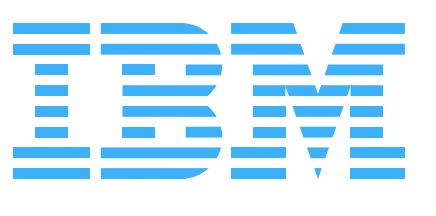




# SCOPE

- The project focuses on predicting employee salaries based on multiple factors such as experience, education level, and job role.
- Uses Machine Learning (Linear Regression) for salary prediction.
- Helps organizations analyze pay structure and make data-driven salary decisions.
- Can be extended in the future using more algorithms (like Decision Tree, XGBoost) or additional features (like location, company size, etc.).





# LINEAR REGRESSION MODEL

- It is a statistical model that finds the best-fitting straight line (called a regression line) through a set of data points to predict future values.

**Mathematical Equation :**  $Y = mX + C$



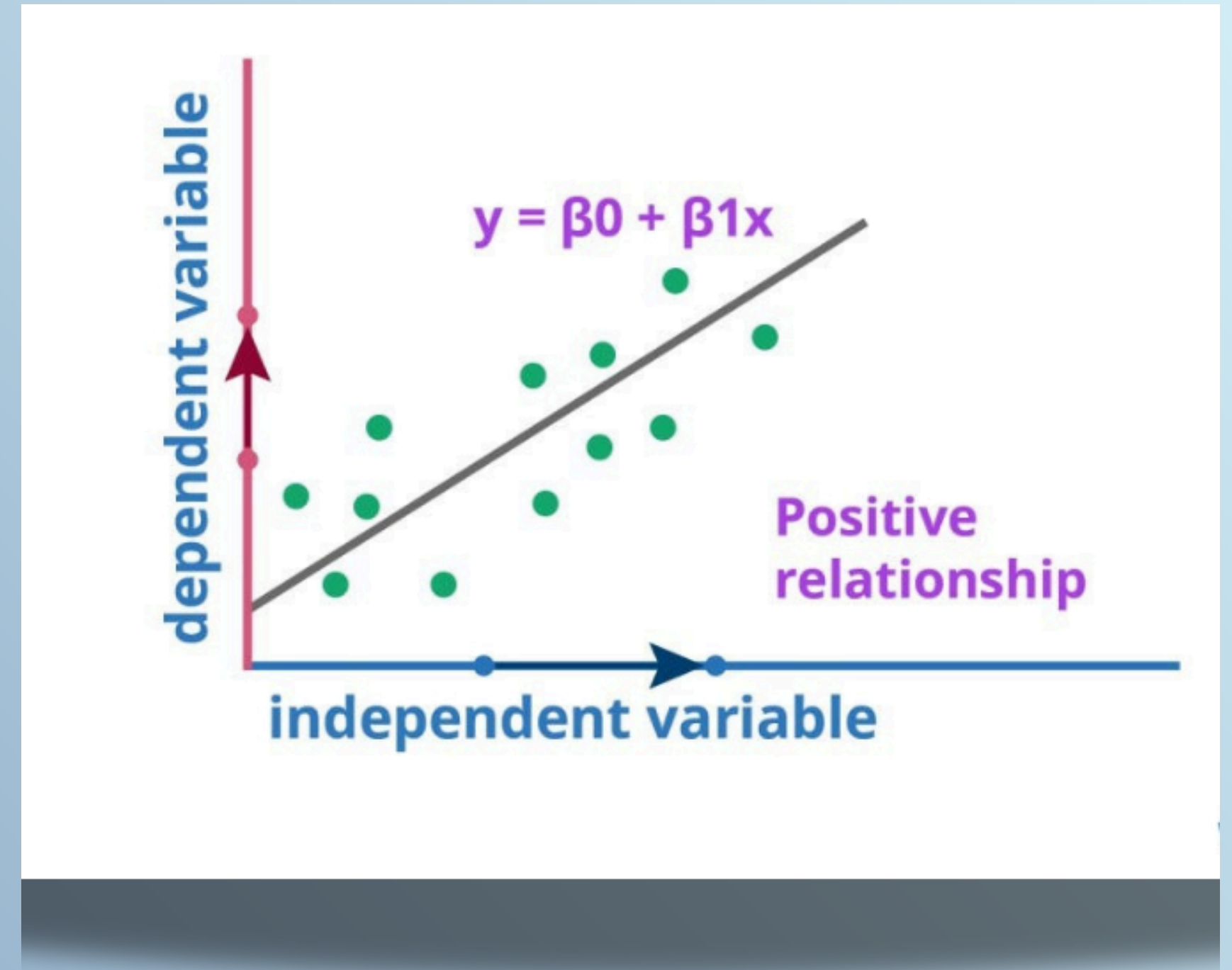
Where:

$Y \rightarrow$  Predicted value (e.g., Salary)

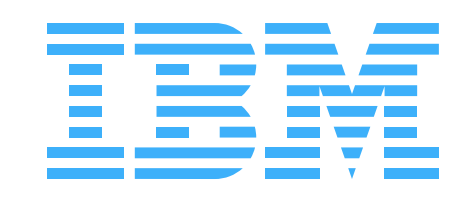
$X \rightarrow$  Input variable (e.g., Experience)

$m \rightarrow$  Slope of the line (shows how much  $Y$  changes when  $X$  changes)

$c \rightarrow$  Intercept (value of  $Y$  when  $X = 0$ )







# METHODOLOGY

Data Collection

Import Dataset using Pandas

Data Preprocessing

Convert categorical data into numeric using Label Encoding

Split dataset using `train_test_split()`

Model Building

Store trained model and preprocessing tools as .pkl files

Model Evaluation

Using metrics ensure that model gives accurate prediction

Deployment




Built a Streamlit (app.py) for real time salary prediction



# Software and Hardware Requirements





## Software

- Python 
- Libraries : pandas , numpy , xgboost  
scikit-learn , matplotlib , seaborn
- Development Tools :  
Jupyter Notebook / VS Code 
- Framework : Streamlit
- Dataset : salary\_Data.csv 



## Hardware

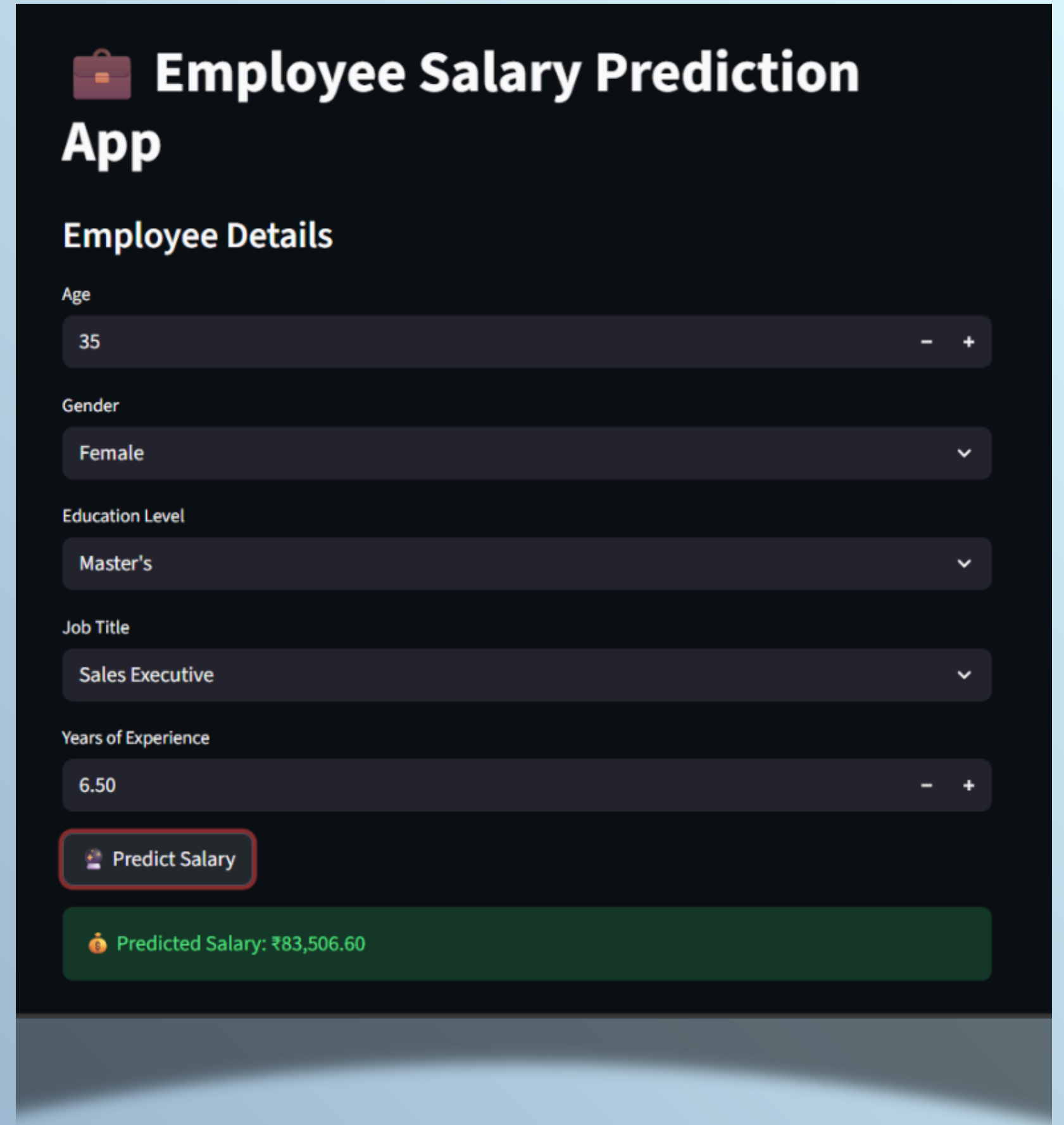
- Laptop/PC with 4GB+ RAM 
- Stable Internet connection 

# OUTPUT :

## 💡 Description :

- The application takes user inputs such as Age, Gender, Education Level, Job Title, and Years of Experience.
- On clicking the “Predict Salary” button, the model predicts the expected salary based on the trained dataset.
- The model uses Linear Regression to estimate salary values accurately.
- The output is displayed instantly on the screen with the predicted amount.

🧠 This demonstrates the working of the Employee Salary Prediction App.



The screenshot shows the 'Employee Salary Prediction App' interface. It features a dark theme with a title bar at the top containing a briefcase icon and the app name. Below the title is a section for 'Employee Details' with five input fields: 'Age' (a numeric input with 35), 'Gender' (a dropdown menu with 'Female'), 'Education Level' (a dropdown menu with 'Master's'), 'Job Title' (a dropdown menu with 'Sales Executive'), and 'Years of Experience' (a numeric input with 6.50). A 'Predict Salary' button is located below these fields. At the bottom, a green box displays the 'Predicted Salary: ₹83,506.60'.

**Employee Salary Prediction App**

**Employee Details**

Age: 35

Gender: Female

Education Level: Master's

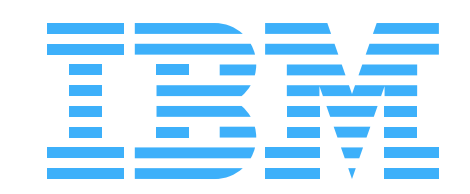
Job Title: Sales Executive

Years of Experience: 6.50

**Predict Salary**

**Predicted Salary: ₹83,506.60**

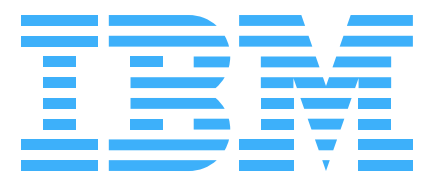
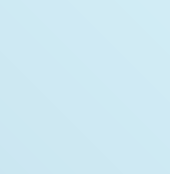




# CONCLUSION

- The project successfully predicts employee salaries using Linear Regression.
- It demonstrates how Machine Learning can automate salary estimation accurately.
- The model helps organizations in fair decision-making and data-driven insights.
- The app provides instant predictions through a simple and user-friendly interface.





# Thank you .

*“The best way to predict the future is to create it.”  
— Peter Drucker*