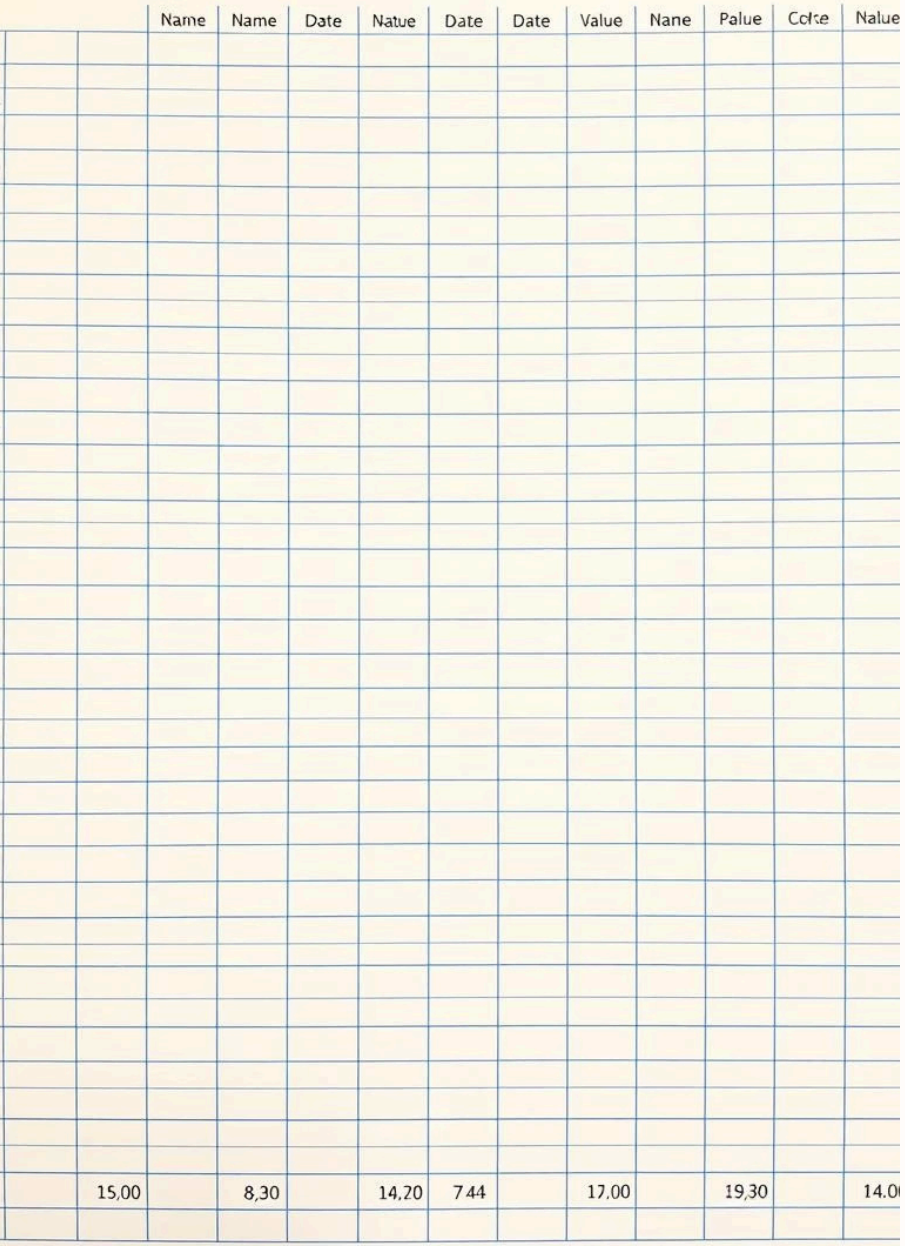
# Predicting Salary from Experience

This project predicts salary based on years of experience. We use machine learning to make accurate predictions. It demonstrates a complete machine learning workflow.




# Dataset Overview

| | |
|---|---|
| **Dataset Name** | Salary_dataset.csv |
| **Rows** | 30 |
| **Columns** | 3 (YearsExperience, Salary, Unnamed: 0) |
| **Characteristics** | Small, clean, no missing values |

Our dataset is small and clean. It focuses on two key features for prediction.

# Preprocessing Steps

### Missing Values Check

Confirmed no missing values were present.

### Duplicate Removal

No duplicate rows were found in the dataset.

### Outlier Handling

Used the IQR method to remove extreme values.

### Feature Scaling

Applied Min-Max and Standard Scaling techniques.

Data preprocessing ensures our model performs optimally. We focused on cleaning and normalizing the data.

# Machine Learning Modeling

### Data Preparation

Cleaned and scaled data is essential.

### Model Selection

Linear Regression is chosen for simplicity.

### Training & Testing

The model learns from prepared data.

Linear Regression establishes the relationship between experience and salary. It uses our preprocessed data for accurate insights.

# Model Evaluation

### Mean Squared Error (MSE)

Quantifies prediction accuracy and error.

### $R^2$ Score (R-Squared)

Indicates explained variance in salary.

Evaluation metrics are crucial for understanding model performance. MSE and $R^2$ help assess prediction quality.

# Key Findings

### Experience-Salary Link

Strong positive relationship observed.

### Outlier Impact

Outliers can reduce model accuracy.

### Scaling Benefits

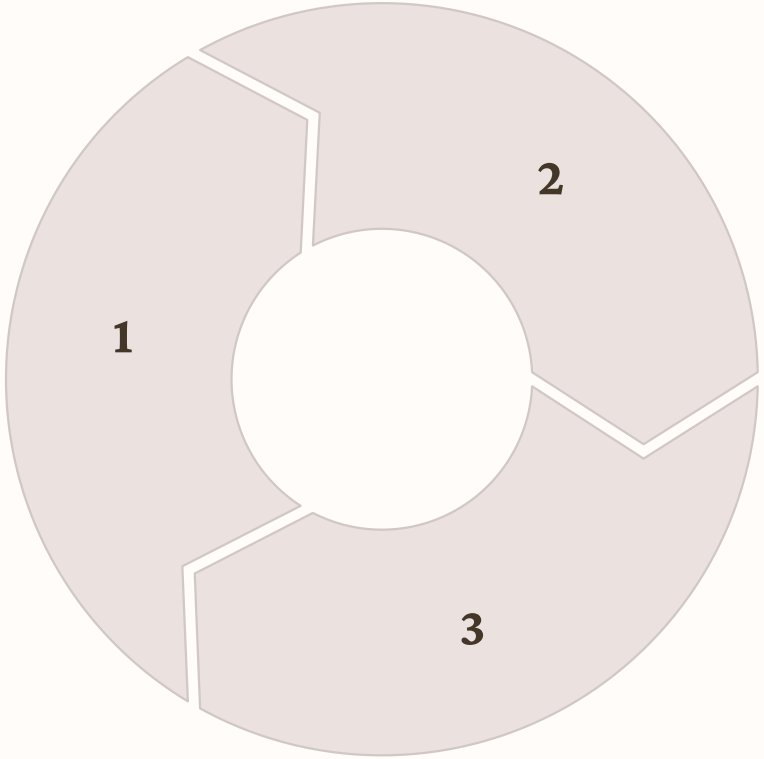
Scaling improves overall performance.

Our analysis reveals a clear link: more experience leads to higher salaries. Proper data handling significantly boosts model accuracy.

# Conclusion and Future Steps

### Experience as Key Predictor

Experience strongly predicts salary.




### Importance of Preprocessing

Cleaning data yields accurate results.

### End-to-End Workflow

Project demonstrates full ML process.

This project showcased a complete ML pipeline. It confirms that experience is a primary salary determinant. Effective preprocessing ensures model accuracy.