**Project Report**

Salary Prediction Based on Years of Experience

**1. Introduction**

**1.1 Objective**

The primary objective of this project is to predict salaries based on years of experience using a simple linear regression model.

**1.2 Scope**

The scope includes data analysis, model development, and insights generation to inform human resource decisions.

**1.3 Project Duration**

The project was initiated on 06-11-2023 and completed on [12-11-2023]. The total time taken for development and analysis was 1-WEEK.

**2. Solution Architecture**

**2.1 Data Collection**

The dataset includes information on YearsExperience and corresponding Salary.

Data was collected from internal logistics systems., and performed preprocessing steps - Handling Missing Values ,Data Splitting and Exploratory Data Analysis (EDA):

**2.2 Exploratory Data Analysis (EDA)**

Conducted a comprehensive EDA to understand the data distribution, identify outliers, and visualize the relationship between YearsExperience and Salary.

**2.3 Model Development**

Utilized a simple linear regression model to predict salaries based on years of experience.

Data was split into training and testing sets for model training and evaluation.

**2.4 Model Evaluation**

Evaluated the model using Mean Squared Error (MSE) and R-squared metrics.

Provided insights into the coefficients and intercept of the model.

**2.5 Challenges Faced**

No challenges.

**2.6 Complexity**

The project complexity was moderate, primarily involving a linear regression model.

**3. Methodology**

**3.1 Data Preparation**

Loaded and preprocessed the dataset, handling any missing or anomalous data points.

**3.2 Exploratory Data Analysis (EDA)**

Generated descriptive statistics and visualizations to gain insights into the data distribution.

**3.3 Model Building**

Developed a simple linear regression model using the scikit-learn library.

Split the data into training and testing sets for model evaluation.

**3.4 Model Evaluation**

Assessed model performance using Mean Squared Error (MSE) and R-squared metrics.

**3.5 Insights Generation**

Provided business insights based on model coefficients and intercept.

Offered recommendations for real-world applications.

**4. Conclusion**

**4.1 Results**

The model demonstrated a positive correlation between YearsExperience and Salary.

Coefficients and intercept provided valuable insights into the relationship.

**4.2 Business Impact**

The model contributes to informed salary negotiations and human resource management decisions.

Insights gained can positively impact employee retention and career development.

**4.3 Future Considerations**

Consider expanding the model to include additional factors for a more comprehensive prediction.

Regularly update the model with new data for continuous improvement.

**5. Acknowledgments**

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**6. References**

<https://github.com/sindydanny/Prediction-with-Regression>