# EMPLOYEE PERFORMANCE PREDICTION

**1. Introduction**

This project aims to predict employee performance using machine learning techniques. The core focus is on analyzing productivity data, engineering relevant features, training predictive models, and deploying them through a user-friendly web interface.

**2. Dataset Overview**

* **Source:** garments\_worker\_productivity.csv
* **Description:** The dataset contains records related to garment worker productivity, including variables such as department, incentives, targeted\_productivity ,over\_time,idle\_time,idle\_men,no\_of\_workors,month,wip,actual\_productivity and more.

**3. Data Preprocessing**

* **Missing values** were identified and handled through imputation like wip variable.
* **Categorical variables** were transformed using multi column label encoder.

**4. Model Development**

* **Training:** Performed in Employee\_Prediction.ipynb using models like XGBoost,Linear and randomforest regression.
* **Model storage:** Trained models were saved as gwp.pkl for deployment.
* **Evaluation:** Metrics such as MSE,MAE,R2-score were computed on validation data.

**5. Results**

* The XGBoost model achieved an accuracy of 80% and an R2-score of 50.91%.
* Feature importance analysis identified key predictors: department,day,team,no\_of\_workers,smv,over\_time,incentives etc.

**6. Deployment**

* A Flask web application (app.py) was developed for inference.
* The user interface is provided using Flask templates includes [home.html,about.html,predict.html,submit.html](http://home.html,about.html,predict.html,submit.html) along static folder with required images and style.css .
* Users can input new employee data and receive performance predictions in real time.

**7. Conclusion**

* The project successfully delivers a pipeline for predicting employee performance.
* Future work includes expanding to new datasets and improving prediction accuracy.

**8. References**

* Dataset: garments\_worker\_productivity.csv
* sklearn, xgboost, seaborn,mcle,pickle,Flask libraries.