

Conclusion

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Project Title	Garment worker productivity prediction

Conclusion:

In a nutshell, the Business Department's goal is to create a solution for predicting garment worker productivity using standard machine learning techniques. The project involved several key steps, including developing a web application for initial data input, model training, evaluation, and forecasting. Through thorough analysis, it was found that variables such as Work In Progress (WIP), overtime hours, SMV, quarter, and day of the week significantly impact production workers' productivity. Data preprocessing included cleaning the data, handling missing values, and encoding variables to prepare for modeling.

Multiple regression models, including linear regression, random forest regression, gradient boost regression, and XGBoost regression, were tested and compared. The best model was selected based on statistical measures such as Mean Squared Error (MSE) and Mean Absolute Error (MAE). The solution offers numerous benefits, such as improved forecasting, automation, data-driven decision-making, scalability, and model evaluation. However, it also has limitations, including data availability and quality, model complexity, interpretability, and maintenance requirements.

The developed web application provides a user-friendly interface for entering relevant variables and obtaining productivity estimates for garment workers. This tool enables managers and decision-makers to make informed decisions, improve resource allocation, and increase efficiency.

In addition, the project underscores the importance of integrating continuous feedback loops from users to refine and enhance the model. It also highlights the potential for expanding the model's application to other areas of the manufacturing process, such as inventory management and quality control. The predictive insights gained can also be leveraged to design better training programs tailored to the needs of individual workers, further boosting productivity.

Overall, the project demonstrates the potential of machine learning in predicting garment worker productivity. The findings emphasize the importance of accurate data, model selection, and continuous monitoring to ensure reliability and effectiveness. Future enhancements will focus on adding functionalities, improving interpretability, and addressing identified limitations. Moreover, incorporating advanced techniques like real-time data integration and adaptive learning models could further enhance the robustness and accuracy of the predictions.