

Summary/Synopsis: This project aimed to address the business problem of enhancing rainfall prediction at London-Heathrow Airport, a critical hub where weather miscalculations can lead to costly flight delays and operational disruptions. Using a dataset sourced from Kaggle, originally provided by the European Climate Assessment & Dataset (ECA&D), I analyzed daily weather data spanning 2000-2010 with Python. After preparing the data, I applied logistic regression and random forest models to classify rainfall based on meteorological features. The random forest model performed best, achieving an accuracy of 78%, and identified 'pressure' and 'humidity' as the most influential factors. This project demonstrated that machine learning can significantly enhance weather prediction, supporting better decision-making and minimizing disruptions in weather-dependent operations.