

Time Series Analysis for Predicting Anomaly using Prophet Models

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ABSTRACT

The increasing complexity and interconnectedness of modern systems have underscored the importance of robust anomaly detection methods, particularly in time series data. This paper presents a comprehensive analysis of application of the Prophet forecasting model for predicting anomalies in time series datasets. The methodology involves preprocessing the time series data, fitting it to the Prophet model, and leveraging its inherent strengths in capturing seasonality, trend changes, and special events. The analysis explores the adaptability of Prophet to different types of time series data, including financial transactions, network traffic, and sensor readings, hardware failure. Furthermore, the paper investigates the impact of hyperparameter tuning and model configuration on anomaly prediction performance. To validate the proposed approach, a comparative analysis is conducted against traditional time series forecasting models and anomaly detection methods. The evaluation metrics include precision, recall, F1 score, and area under the receiver operating characteristic curve (AUC-ROC). The experimental results demonstrate the effectiveness of Prophet in accurately identifying anomalous patterns in diverse time series datasets.

Keywords: Time series, anomaly, anomaly detection

How to Cite

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