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**21BIS017**

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**Technical Report on Prophet Algorithm**

**Introduction**

The Prophet algorithm is a forecasting tool developed by Facebook that is designed to handle time series data with strong seasonal effects and several seasons of historical data. It is particularly useful for datasets with missing values and outliers.

**Model Parameters**

* **Growth**: Defines the model growth type; can be 'linear' or 'logistic'.
* **Change Points**: Points where the time series shows a change in trend. The algorithm automatically detects these points, but they can be specified manually.
* **Seasonality**: Options to add seasonal effects; can be yearly, weekly, or daily. The seasonality can also be adjusted for custom periods.
* **Holidays**: Allows the incorporation of holidays and their effects on the forecast, which can be modelled explicitly.
* **Changepoint Prior Scale**: A parameter that controls the flexibility of the trend. A higher value allows the model to adapt more to the data.

**Model Validation**

To validate the model performance, cross-validation can be performed using the cross\_validation function from the fbprophet library, allowing for robust testing of the model’s predictive capabilities.

**Conclusion**

Prophet provides an intuitive approach to time series forecasting, making it accessible for users with varying levels of statistical knowledge. Its flexibility and ease of use make it an excellent choice for business applications.