Forecasting Weight Dynamics and Visualizing Historical Data

A Time Series Analysis Contest

Introduction

Welcome to the "Forecasting Weight Dynamics and Visualizing Historical Data: A Time Series Analysis Contest!"

Objective:

- Develop forecasting models to predict an insect colony weight using colony and environmental data.
- Create a Power BI dashboard to visualize the relationships between colony weight and other factors, as well as the historical data overall.

Dataset Overview

Features:

- *Date, Colony Activity, Dead Colony Weight, Nest Temperature, Nest Humidity, Red Luminous Intensity, Green Luminous Intensity, Blue Luminous Intensity, White Luminous Intensity, IR Luminous Intensity, Sound Intensity,* ***Nest Weight***

Contest Guidelines

Exploratory Data Analysis:

- Explore both colony data and environmental data to understand their characteristics and identify patterns and correlations and handle outliers.

Feature Engineering:

- Engineer additional features that capture the relationships between colony features and environmental factors.

Contest Guidelines

Model Development:

- Develop time series forecasting models for the **nest weight** using techniques like ARIMA, SARIMA, linear regression, decision trees, generalized additive models, or machine learning algorithms.
- Highlight the interpretability of the models, such as examining coefficients, feature importance, or partial dependence plots.

Contest Guidelines

Model Evaluation:

- Assess model performance using MSE over a test set that will be provided to you along with the training dataset.
- Explain the interpretability and insights derived from the models.

Power BI Dashboard:

- Create an interactive dashboard to visualize historical data effectively.

Contest Guidelines

Submission Requirements:

- Submit predictions for the test set and provide a Power BI file or sharable link to the dashboard. Documentation explaining the methodology, models, and insights is mandatory.

Winner Selection:

- Evaluation based on prediction accuracy, model quality, and dashboard effectiveness.

Judging Criteria

Prediction accuracy:

- Based on evaluation metrics (MSE, RMSE, etc.).

Model quality:

- Robustness, accuracy, and interpretability of the forecasting models.

Dashboard effectiveness:

- Visualizations, user experience, and integration with interpretable models.

Q&A

If you have any questions, feel free to ask!

Thanks!