1. **Important Note:**

**This is a general Graphical User Interface (GUI) for predicting and forecasting Chlorophyll-a (Chl-a) concentrations. This tool was NOT used to obtain the results of our study, although it contains the same models provided for general application.**

1. **General Information:**

* The GUI contains univariate time series models, including:
  + KAN (Kolmogorov-Arnold Networks)
  + MLP-NN (Multilayer Perceptron Neural Network)
  + LSTM (Long Short-Term Memory)
  + GRU (Gated Recurrent Units)
  + RF (Random Forest)
  + GPR (Gaussian Process Regressor)
  + SVR (Support Vector Regressor)
* **Lag Features**: 12 lag features are automatically created, as the original work contained monthly Chl-a data. You can modify the lag duration in the code if your data has a different frequency.
* **Forecast Duration**: By default, the forecast duration is 6, which in the original work was used to forecast the next six months. If your data has a different frequency, you are encouraged to modify the forecasting duration in the code accordingly.
* After selecting the model, the tool will train it on your dataset, and the plot of actual vs. predicted values will be presented along with key metrics (MAE, MSE, R²). You can then proceed to forecast future values using the trained model.

1. **Caution:**

**Since this is a general tool with wide applicability, you could improve the performance of models by optimizing hyperparameters specific to your dataset.**

1. **Required Libraries:**

Below is a list of libraries required to run the code. All of these can be found online, and none are local libraries.

* tkinter
* pandas
* matplotlib
* sklearn
* numpy
* statsmodels
* torch
* tqdm
* tensorflow
* deepkan
* scipy
* RandomForestRegressor
* GaussianProcessRegressor
* SVR