**Build Piecewise and Spline Regression Models from Scratch**

**Project Overview**

The problem statement entails forecasting the points won by a sports team based on

their training performance, which fundamentally includes features such as the number

of yoga sessions attended, the number of laps done, water intake, weightlifting sessions, and so on. The machine learning solution to the problem statement would allow key stakeholders to monitor and enhance the team's training performance.

The project is to Build a Polynomial Regression Model from Scratch where a polynomial regression model was built to predict the points scored by the sports team.

This project involves implementing Piecewise Regression and various Spline Regression techniques to improvise the results

Piecewise Regression, also known as segmented regression, is a regression analysis

pproach in which the independent variable is partitioned into intervals and each

interval is fitted with different linear functions. The rationale behind piecewise linear

regression is that if the data exhibits various linear trends over different portions of the data, the overall regression function can be modeled in multiple "pieces."

Spline Regression or spline interpolation produces a piecewise continuous function

made up of several polynomial regression functions.

**Aim**

To predict points scored by the sports team using piecewise and spline regression.

**Data Description**

The dataset contains information about the points scored by sports teams based on

various attributes.

**Tech Stack**

➔ Language: Python

➔ Libraries: pandas, numpy, scipy, matplotlib, seaborn, sklearn, statsmodels,

piecewise\_regression, csaps, py-earth, mlfoundry

**Approach**

* Data Reading
* Data Preprocessing
* Outlier Removal
* One Hot Encoding
* Imputing Missing Values
* Model Building
* Linear Regression
* Polynomial Regression
* Step Functions
* Piecewise Regression
* Basis Functions
* Spline Regression
* Univariate Model
* Bivariate Model
* Multivariate Adaptive Regression Splines (MARS) Model
* Model Evaluation and Comparison
* Experiment Tracking with ML Foundry