**Team Name: Team Infinity  
Team Members: Damodhar Zanwar, Manav Patni**

**Burnout Datathon**

We developed a regression-based machine learning solution to predict average lap times of MotoGP riders using XGBoost and CatBoost models. After performing thorough data cleaning, label encoding, and feature analysis, we trained both models on key race, rider, and environmental features. To boost performance and reduce RMSE, we combined the strengths of both models using a stacking regressor with Ridge as the meta-learner. This ensemble approach captured complex patterns in the data and provided robust predictions, resulting in a well-generalized and accurate lap time forecasting model.

The best RMSE Developed by us is by using XGBoost Model: -

**XGBoost RMSE:** 10.635147372997457

We tried different models:

1. **Linear Regression:**

Linear Regression RMSE: 11.538985186856433

1. **Random Forest Regression:**

Random Forest Regression RMSE: 11.248978232453

1. **XGBoost:**

XGBoost RMSE: 10.635147372997457

1. **CatBoost:**

CatBoost RMSE: 11.268709307109962