

Feature Engineering

- Created Outlet_Type_Size_Location by combining Outlet_Type, Outlet_Size, and Outlet_Location_Type to capture outlet interactions.
- Created Weight/Visibility by dividing Item_Weight by Item_Visibility to represent density.
- Created Outlet_Age by subtracting Outlet_Establishment_Year from 2013 to account for outlet age effect.
- Extracted Item_Type_Category from the first 2 letters of Item_Identifier to generalize item types.
- Created Category_MRP_Mean representing average MRP per Item_Category to capture typical pricing.
- Created Outlet_Group_MRP_Mean representing average MRP per outlet group to capture outlet-specific price bias.
- Created Outlet_Visibility_Mean representing average visibility per outlet to capture marketing placement impact.
- Created Item_Outlet_Visibility_Deviation to highlight visibility outliers compared to the outlet mean.

Feature Encoding and Feature Scaling

- With the help of label encoder there is the need to convert categorical columns into numerical columns as ML/DL models doesn't understand the text while model training.
- Feature Scaling is required to scale down all the features into similar range so that Distance ML Models like Regression, Lasso and Ridge perform efficiently.
- Feature Scaling is not required for tree based models.