

Battling Food Waste in Retail-Stores

Predicting Retail-Stores Demand

Team JSS



Consumer behaviors are sometimes unexpected

- Demand for different items varies at different points in time.
- Various external factors affect the demand.



- Most of the wastage comes from the perishable food being not consumed on time.
- Demand Forecasting helps in optimizing the inventory for maximum utilization.
- Reduction in waste has monetary and environmental benefits.
- 170 million metric tons of CO₂ emissions - 42 coal powered plants !



Enhance Demand Planning is
the best solution!

- Retail stores have the biggest influence on food demand connecting producers and suppliers to consumers.

Annual Impact Potential *



Net Financial Benefit
\$ 5.19 billion



Food Waste Diversion
1.24M Tons



Emissions Reduction
2.78M Metric Tons CO2e



Water Savings
200B gallons



Jobs Created
1.88k

Data from <https://refed.org/>

Methodology

- Dataset:
- Data Source: Store Demand Forecasting from Kaggle
- Data Size: 931,000 entries

Methods:

- Visualization of test data
- Analyze possible trends
- Train test data to Xgboost model

```
= modifier_ob.  
object to mirror  
od.mirror_object  
on == "MIRROR_X":  
    mod.use_x = True  
    r_mod.use_y = False  
    or_mod.use_z = False  
    operation == "MIRROR_Y":  
    ror_mod.use_x = False  
    rror_mod.use_y = True  
    rirror_mod.use_z = False  
    operation == "MIRROR_Z":  
    rirror_mod.use_x = False  
    rirror_mod.use_y = False  
    rirror_mod.use_z = True
```

```
selection at the end -add  
r_ob.select= 1  
r_ob.select=1  
context.scene.objects.active  
("Selected" + str(modifier_ob  
mirror_ob.select = 0  
= bpy.context.selected_object  
data.objects[one.name].select  
print("please select exactly
```

--- OPERATOR CLASSES ---

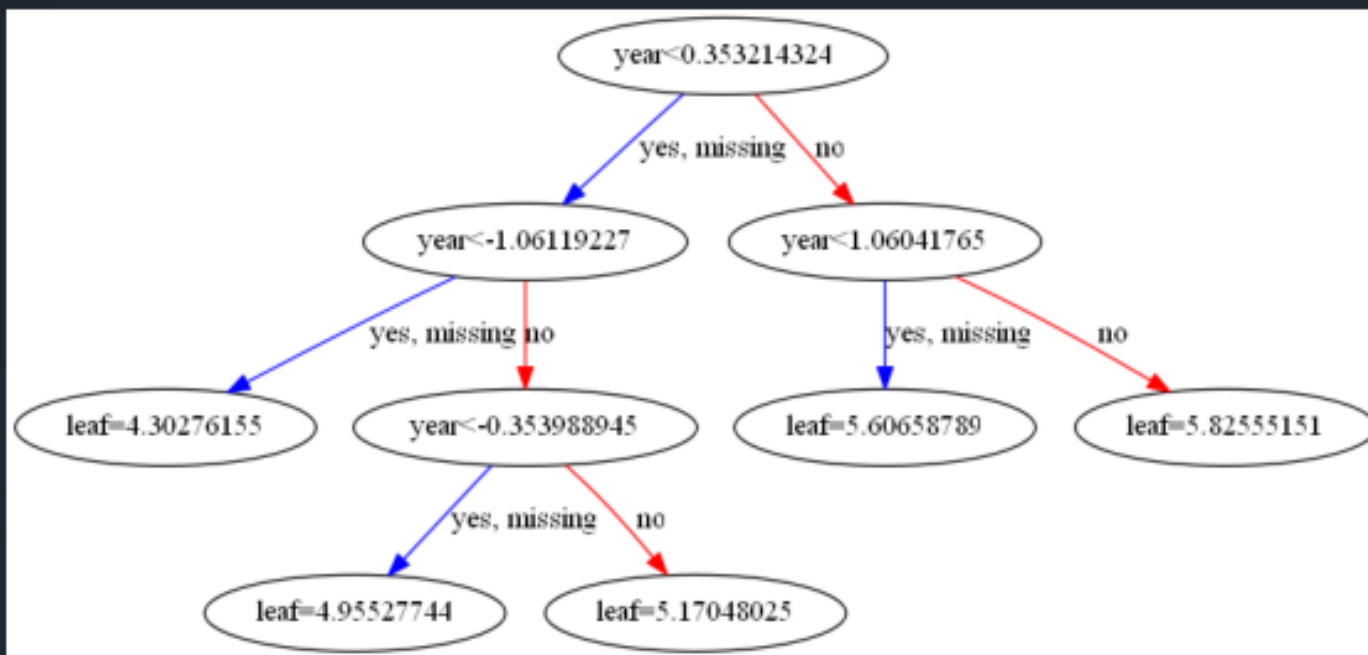
```
types.Operator):  
    X mirror to the selected  
    object.mirror_mirror_x"  
    mirror X"
```

```
context):  
context.active_object is not
```


XGboost RMSE: 8.35

Accuracy : 95%

Weekly avg and monthly avg are most important when it comes to predicting sales values.



Social Impact and Feasibility

Financial benefits :
Government, Retailers and
Consumers

Food Security : Ensuring all
people have access to food

Environmental Benefits

Stores have a lot of items
but we target perishable
food items as they are a
major source of concern.

Currently a lot of stores do
inventory management
manually making them
hard which is hard to
manage and scale.



Future Plans

- Using real time streaming data for accurate predictions
- Optimizing the model
- Targeting the food wastage at household level



Thank You