RIGHT FOOD FOR HEALTHY LIFE

USING MACHINE LEARNING TECHNIQUES TO CHOOSE RIGHT FOOD CATEGORY BASED ON NUTRIENTS PRESENT IN THE DATA

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MOTIVATION TO DO THE PROJECT

HEALTH IS WEALTH. A HEALTHY MAN IS MORE PROACTIVE AND EFFICIENT AT WORK. HE WILL BE AN ASSET TO AN ORGANIZATION AND TO THE SOCIETY.

IN ORDER TO BE HEALTHY, A PERSON MUST EAT RIGHT AND EXERCISE REGULARLY. FOOD PLAYS A MAJOR ROLE IN A PERSON'S HEALTH.

RIGHT FOOD IS THE KEY FOR HEALTHY LIFE.

WE OFTEN SHOP GROCERIES OR READY-TO-EAT PRODUCTS WITHOUT EVEN LOOKING AT THE NUTRIENT PRESENT IN IT. REALIZING IT, I WANTED TO DO AN ANALYSIS WHICH WILL HELP ME PICK RIGHT FOOD PRODUCTS BASED ON THE NUTRIENT LEVELS I AM LOOKING AT.

OBJECTIVES

The goal of this project is to check the amount of calories and other nutrient present in different categories of food using machine learning models

Implement Machine Learning Model

Normalization techniques

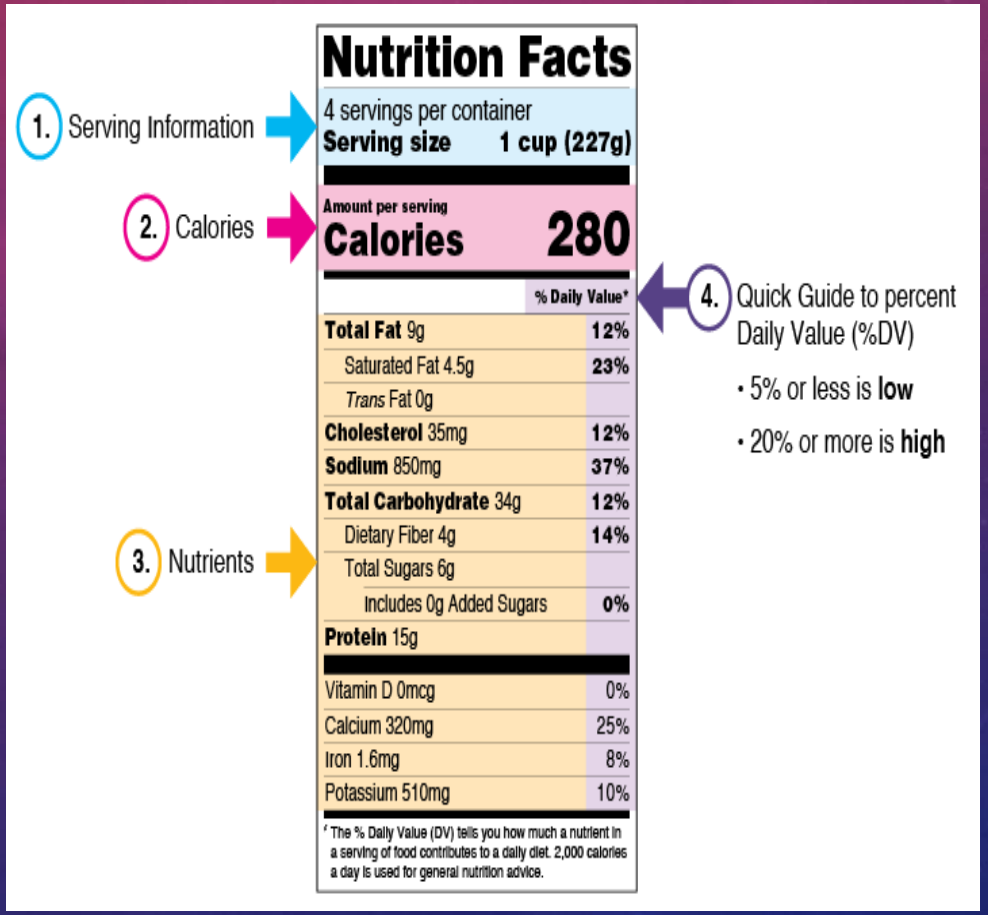
Support Vector Machines

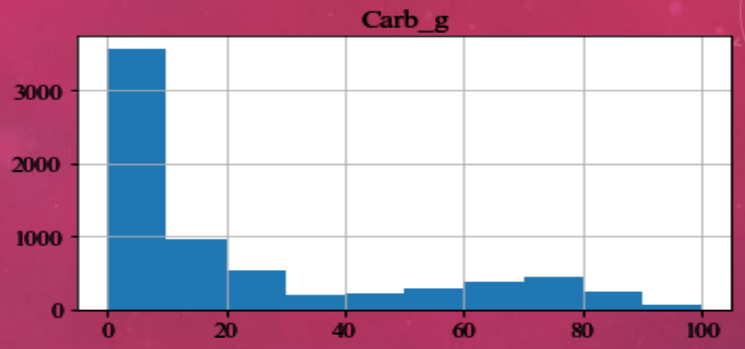
Predicting the accuracy of the model

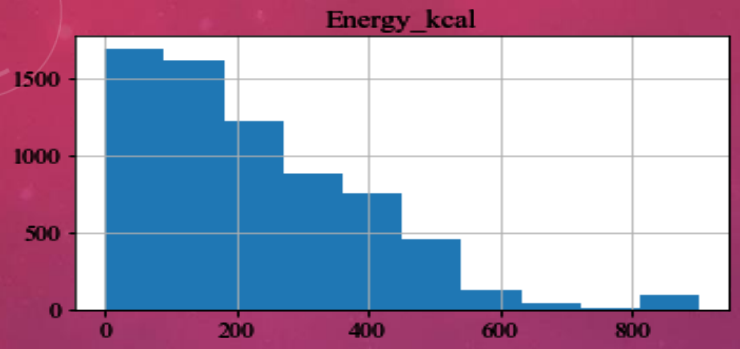
Model ready for real time implementation

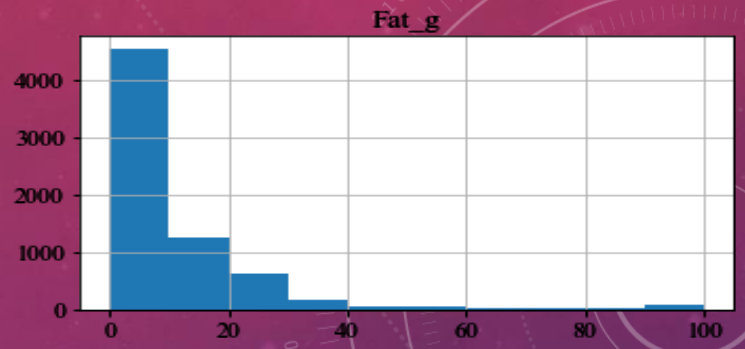
NUTRIENTS CHART

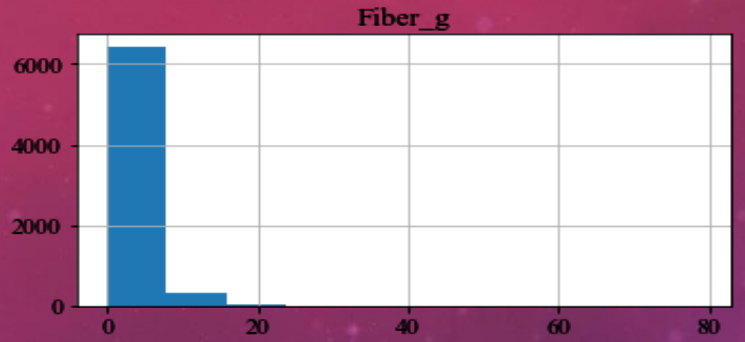
WE SEE THIS CHART ON MOST OF THE PRODUCTS. BUT NOT ALL OF US CARE MUCH ABOUT THE DATA GIVEN ON THOSE CHARTS. CHOOSING THE RIGHT FOOD IS THE KEY FOR A HEALTHY LIFE

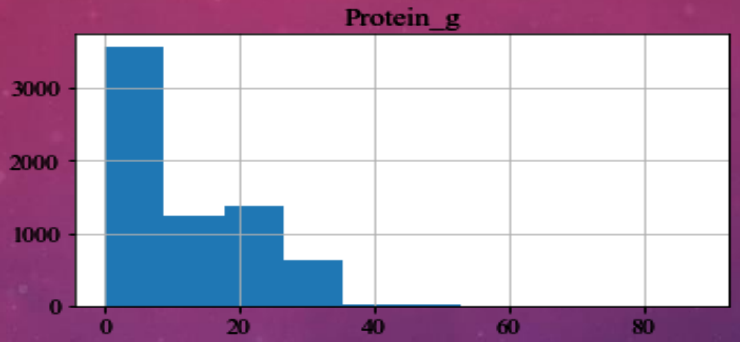


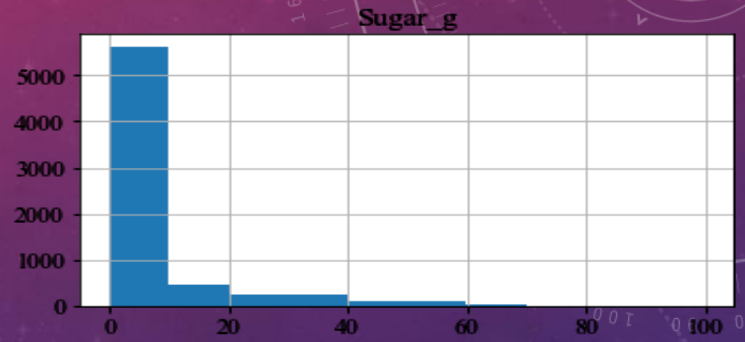


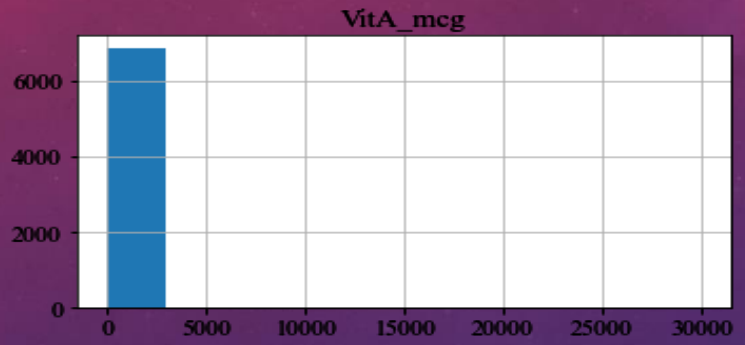


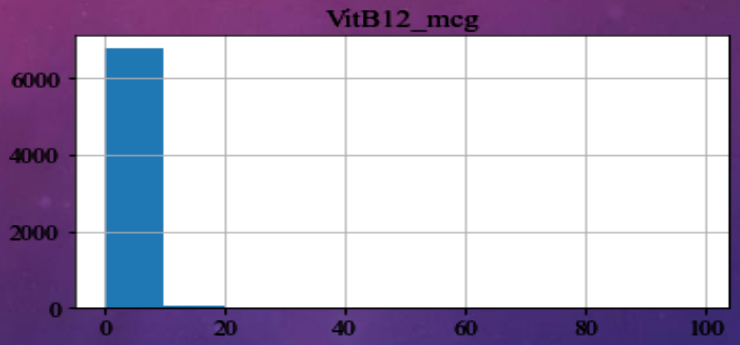


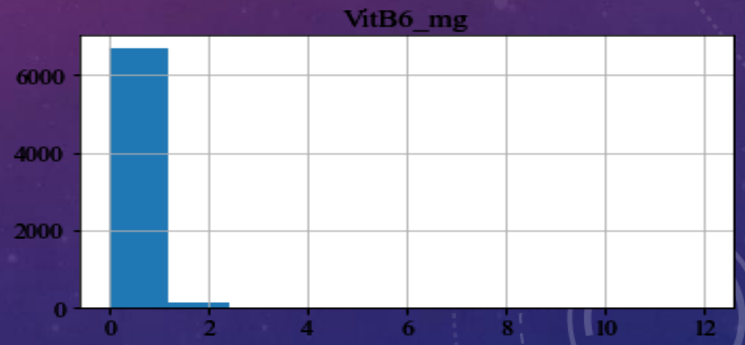


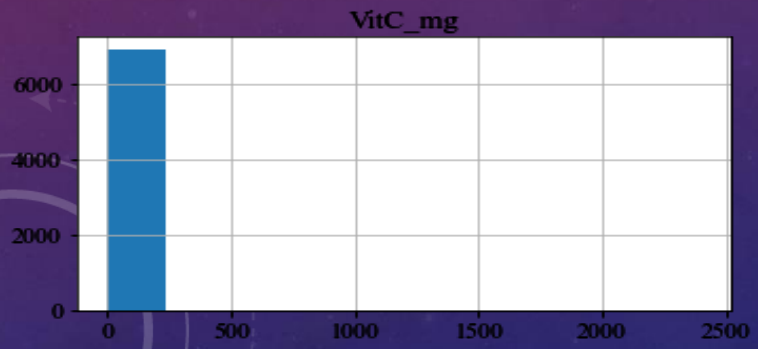


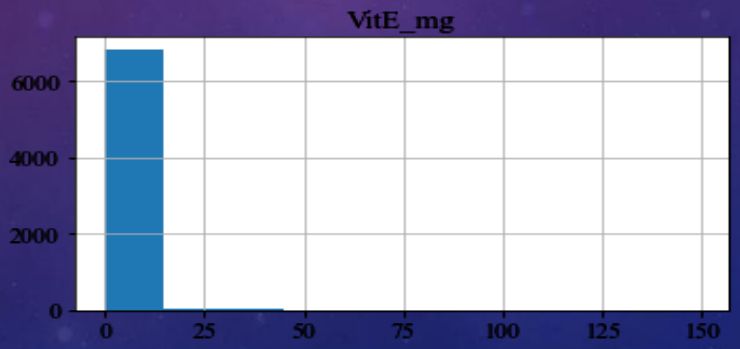






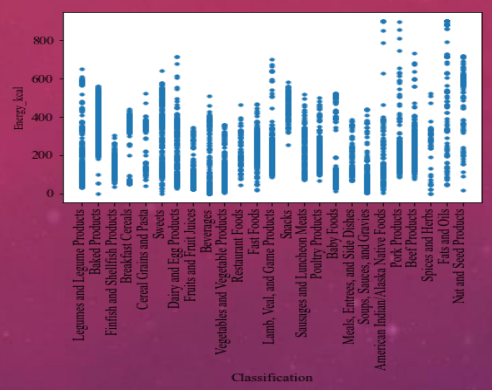


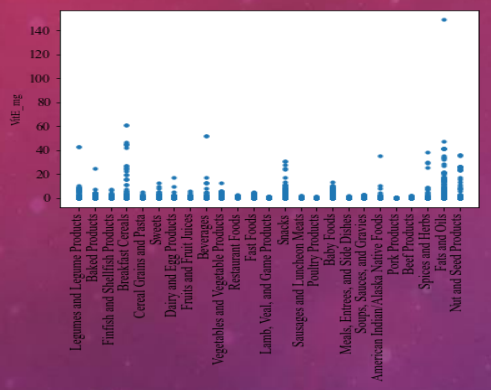


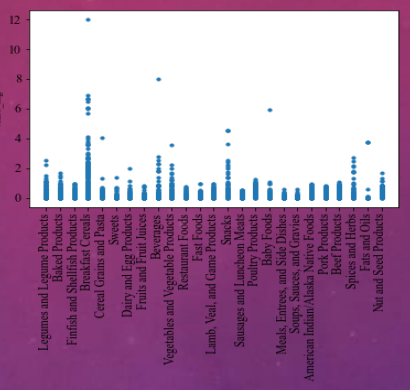


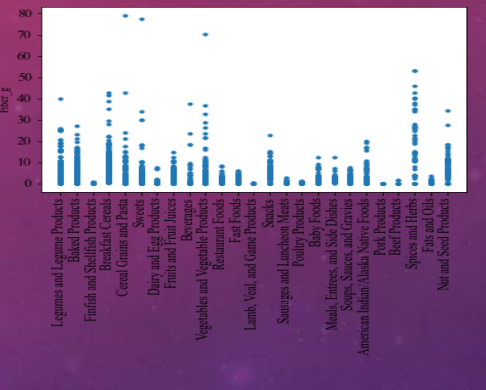
DATA EXAMINATION

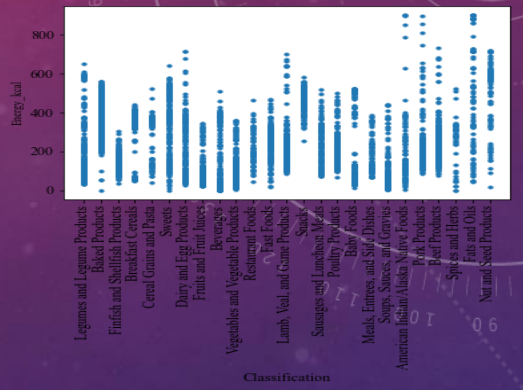
CHECKING VALUE DISTRIBUTION IN EACH NUTRIENT

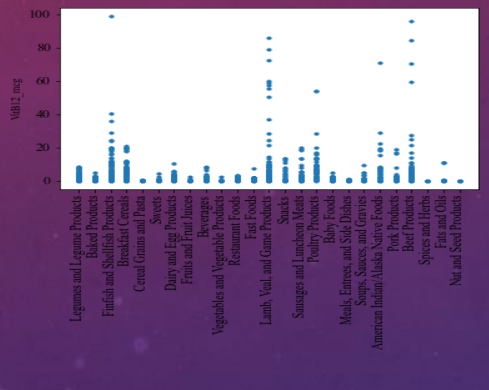


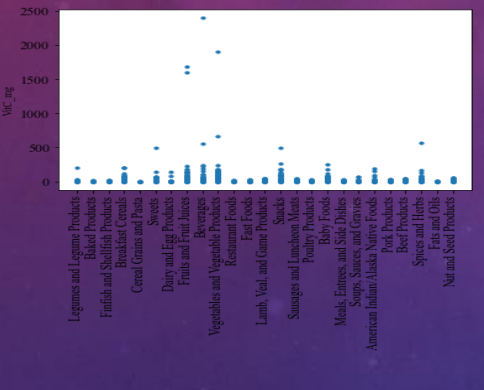


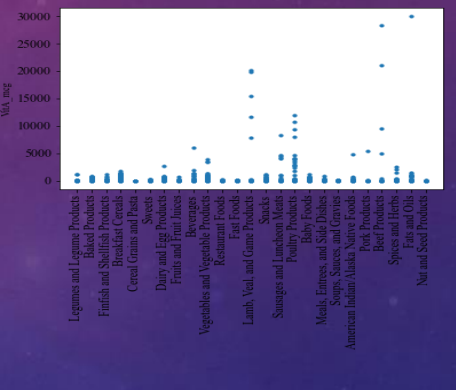


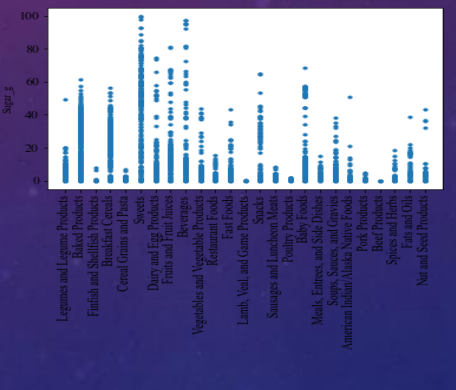




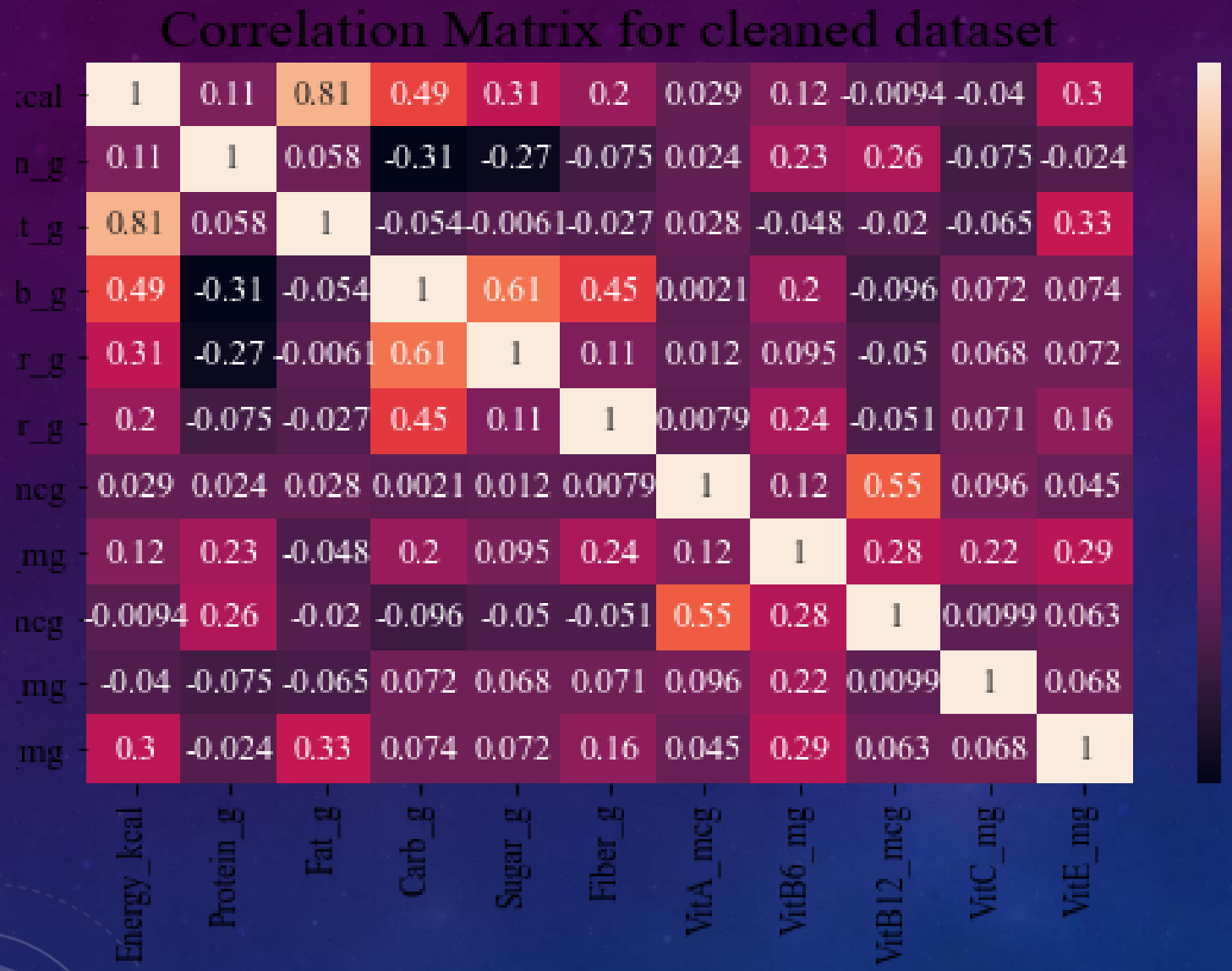






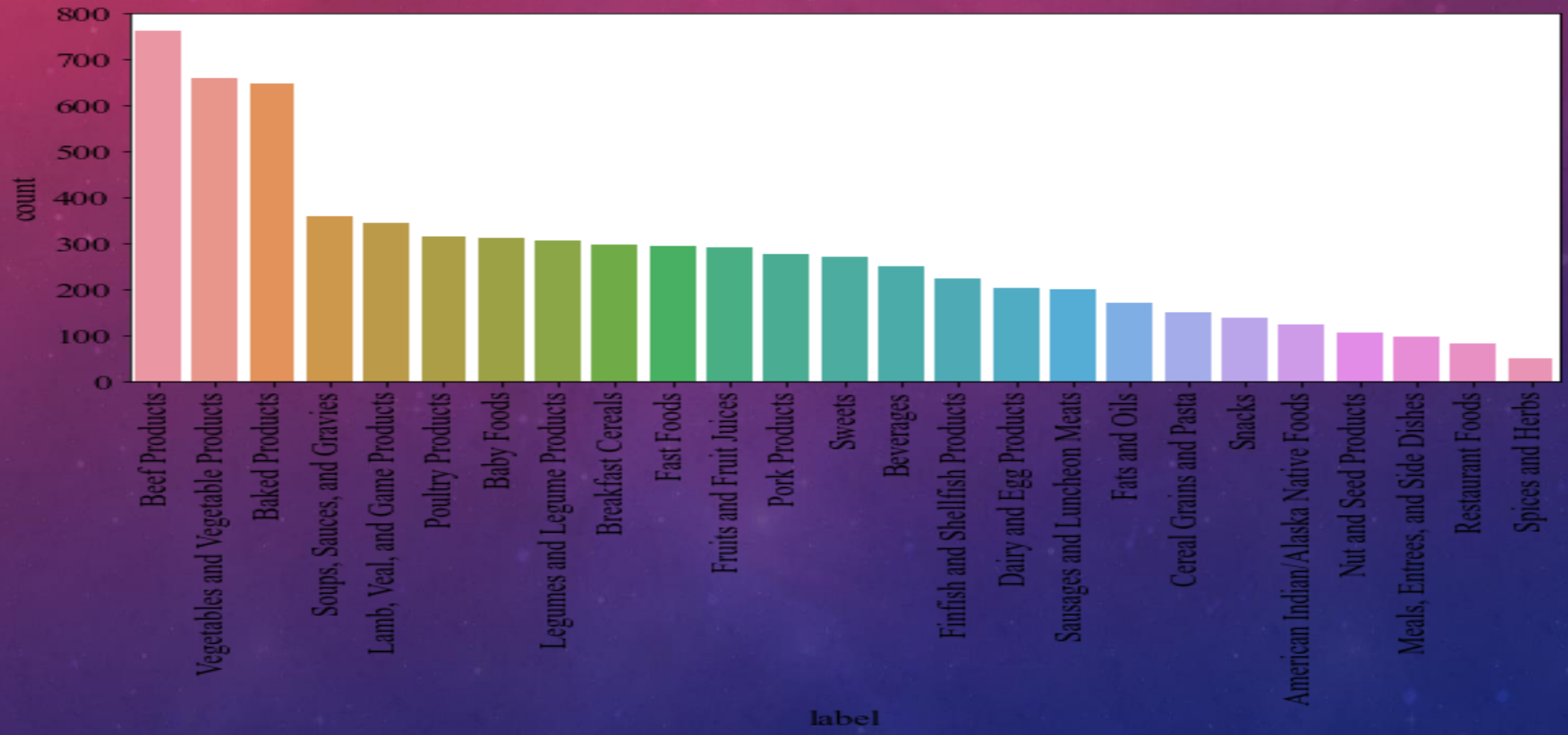


CORRELATION MATRIX



- Fat and Energy have highest correlation
- There is a great variation of correlation

CATEGORY_COUNT



RESULT

CLASSIFICATION_REPORT

	precision	recall	f1-score	support
American Indian/Alaska Native Foods	1.00	0.08	0.15	24
Baby Foods	0.49	0.37	0.42	62
Baked Products	0.70	0.91	0.79	129
Beef Products	0.40	0.99	0.57	152
Beverages	0.50	0.04	0.07	50
Breakfast Cereals	0.93	0.73	0.82	59
Cereal Grains and Pasta	0.49	0.57	0.52	30
Dairy and Egg Products	0.29	0.05	0.08	41
Fast Foods	0.63	0.69	0.66	58
Fats and Oils	0.86	0.71	0.77	34
Finfish and Shellfish Products	0.33	0.34	0.33	44
Fruits and Fruit Juices	0.55	0.64	0.59	58
Lamb, Veal, and Game Products	0.67	0.03	0.06	68
Legumes and Legume Products	0.58	0.57	0.58	61
Meals, Entrees, and Side Dishes	0.00	0.00	0.00	19
Nut and Seed Products	0.73	0.52	0.61	21
Pork Products	0.00	0.00	0.00	55
Poultry Products	0.60	0.05	0.09	63
Restaurant Foods	0.00	0.00	0.00	16
Sausages and Luncheon Meats	0.63	0.60	0.62	40
Snacks	1.00	0.11	0.20	27
Soups, Sauces, and Gravies	0.29	0.19	0.23	72
Spices and Herbs	0.50	0.40	0.44	10
Sweets	0.60	0.65	0.62	54
Vegetables and Vegetable Products	0.46	0.87	0.61	132
accuracy			0.52	1379
macro avg	0.53	0.40	0.39	1379
weighted avg	0.53	0.52	0.45	1379

- There is great variation between the precision and recall values. This is because of data imbalance
- This data imbalance can be fixed using data balance techniques
- I have used SVM model, but other models can be used to improve the accuracy.
- The accuracy can also by improved by considering more x parameters i.e. nutrient values in this case.

LIMITATIONS AND LATER WORK

Limitations:

- Apart from the 12 popularly known nutrient values I have not considered other nutrient values
- Since I have limited the nutrient consideration the accuracy of the model is just 52%
- Not all the SVM parameters has been used.
- Since the data is imbalanced the precision is varying

Later work:

- Other Machine Learning models can be used to improve the accuracy.
- This model can be implemented on real time machine to identify the food products
- Data Balance technique can be employed.

THANK YOU!

HTTPS://GITHUB.COM/ASHUTHOSHC/RIGHTFOOD_HEALTHYLIFE