MILK GRADING SYSTEM USING IBM WASTON

INTRODUCTION

This high quality milk should be white in appearance, have no objectionable odors and be free of abnormal substances such as pesticides, added water or antibiotic and antiseptic residues. Normal milk from high producing Holstein or Friesian dairy cows is composed of water (87%), fat (3.8%), proteins (3.4% of which 3/4 is casein), sugars (ie., lactose, 4.5%) and other solids such as minerals (1.3%). Milk also contains a quantity of minor components, including sloughed somatic cells. Somatic cells are composed of white blood cells (WBC) and occasional sloughed epithelial cells.

1.1 OVERVIEW

The milk quality is determined by its visual appearance,absence of adulterating substances and ability to meet specific quality standards for somatic cell count (SCC), and bacteria court. There exist several diagnostic tests of milk quality. Some of them are applicable on dairy farms, like for example, the Califonia Mastitis Test (CMT) and the Milk Conductivity Test (MCT) Other tests, such as the bulk mik bacterial count, the bulk tank somatic cell count and tests for adulterants ke water, sediments or antibiotics, are used in laboratories. The knowledge required to successfully apply the existing milk quality tests can be rather extensive and pertains both to the methodology and the diagnostic capabilities of a given test. Therefore, there is a need for new simple and low-cost methods of milk quality testing. This paper presents a new method of milk quality classification using low-cost optical capillaries. In this method, milk quality is determined by observation of milk behaviour under specific beating conditions using a simple low cost photonic system with optical capillaries. We show that the optical capillary is a stable tool for analysing liquids showing high scatering of light, such as milk.

1.2 PURPOSE

The main objective of the project is to milk processing allow the preservation of milk for days, weeks or months and help to reduce food-brone illness, the usable life of milk can be extended for several days through techniques such as cooling (which is the factor most likely to influence the quality of raw milk) or fermentation.

CHAPTER 2

LITERATURE SURVEY

- The operation of receiving milk may be subdivided into:
- A. Unloading
- B. Grading
- C. Sampling
- D. Weighing
- E. Testing

- **A. Unloading**:
- : The motor truck carrying the filled milk cans is backed up (or brought aside) to the unloading platform. The milk cans are then unloaded manually.

- **B. Grading**:
- This refers to the classification of milk on the basis of quality, for price fixing purposes. It is well known that the quality of the finished product depends on that of the raw material used. The milk grader is the key man for the proper selection of the milk.

- **C. Sampling**:
- The importance of securing an accurate and representative sample of milk for subsequent chemical and bacteriological analysis cannot be over emphasized. While strict precautions regarding sterility of the stirrer, sampler, container, etc.

- **D. Weighing**:
- This is an essential step in accounting for milk receipts and disposal, making payments for milk, etc. E. Testing: Apart from initially accepted or rejected lots of milk, there are always some of doubtful qualities

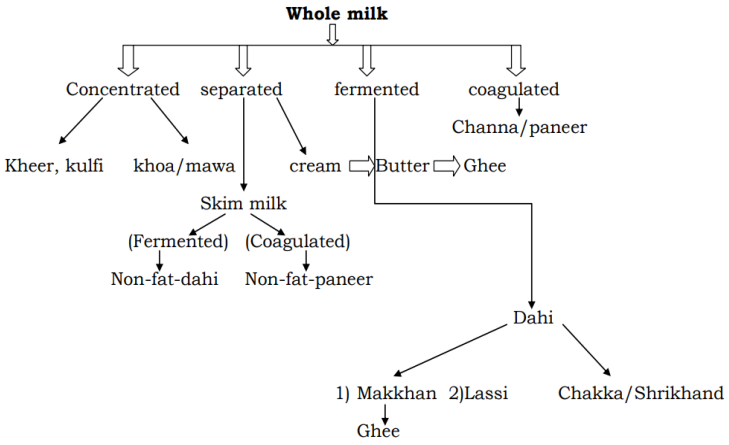
- **E. Testing**:
- Apart from initially accepted or rejected lots of milk, there are always some of doubtful qualities. All the accepted lots have already been properly sampled.

CHAPTER 3

METHDOLOGY

3.1 ¬ Methods of cooling:

1. In can or can-immersion method: From carrying-pails, the milk is poured directly into cans through a strainer. When the can is full, it is gently lowered into a tank/trough of cooling water. (Note: the water level in the tank should be lower than the level of milk-in-cans, to prevent water entering into the milk.
2. **Classification of Milk:**



3.2 HARDWARE / SOFTWARE DESIGNING

The hardware required for the development of this project is:

Processor : Intel CoreTM i5-9300H
Processor speed : 2.4GHz
RAM Size : 8 GB DDR
System Type : X64-based processor

SOFTWARE DESIGNING:

The software required for the development of this project is:

Desktop GUI : Anaconda Navigator
Operating system : Windows 10
Front end : HTML, CSS,JAVASCRIPT
Programming : PYTHON
Cloud Computing Service : IBM Cloud Services

CHAPTER 4

EXPERIMENTAL INVESTIGATION

IMPORTING AND READING THE DATASET

Importing the Libraries
First step is usually importing the libraries that will be needed in the program.
Pandas: It is a python library mainly used for data manipulation.
NumPy: This python library is used for numerical analysis.
Matplotlib and Seaborn: Both are the data visualization library used for plotting graph which will help us for understanding the data.
csr_matrix() :A dense matrix stored in a NumPy array can be converted into a sparse matrix using the CSR representation by calling the csr_matrix() function.
Train_test_split: used for splitting data arrays into training data and for testing data.
Pickle: to serialize your machine learning algorithms and save the serialized format to a file.

Reading the Dataset
For this project, we make use of three different datasets (Books_Ratings, Books, Users). We will be selecting the important features from these datasets that will help us in recommending the best results.
The next step is to read the dataset into a data structure that's compatible with pandas. Let's load a .csv data file into pandas. There is a function for it, called **read_csv().**We will need to locate the directory of the CSV file at first (it's more efficient to keep the dataset in the same directory as your program).If the dataset in same directory of your program, you can directly read it, without any path. After the next Steps we made following bellow:

1.Data visualization

2.Collabrative and filtering

3.Creating the Model

4.Test and save the model

5.Buil Python Code

6.Build HTML Code

7.Run the Application
We are the following above sections we did and investigate it.

CHAPTER 5

FLOWCHART

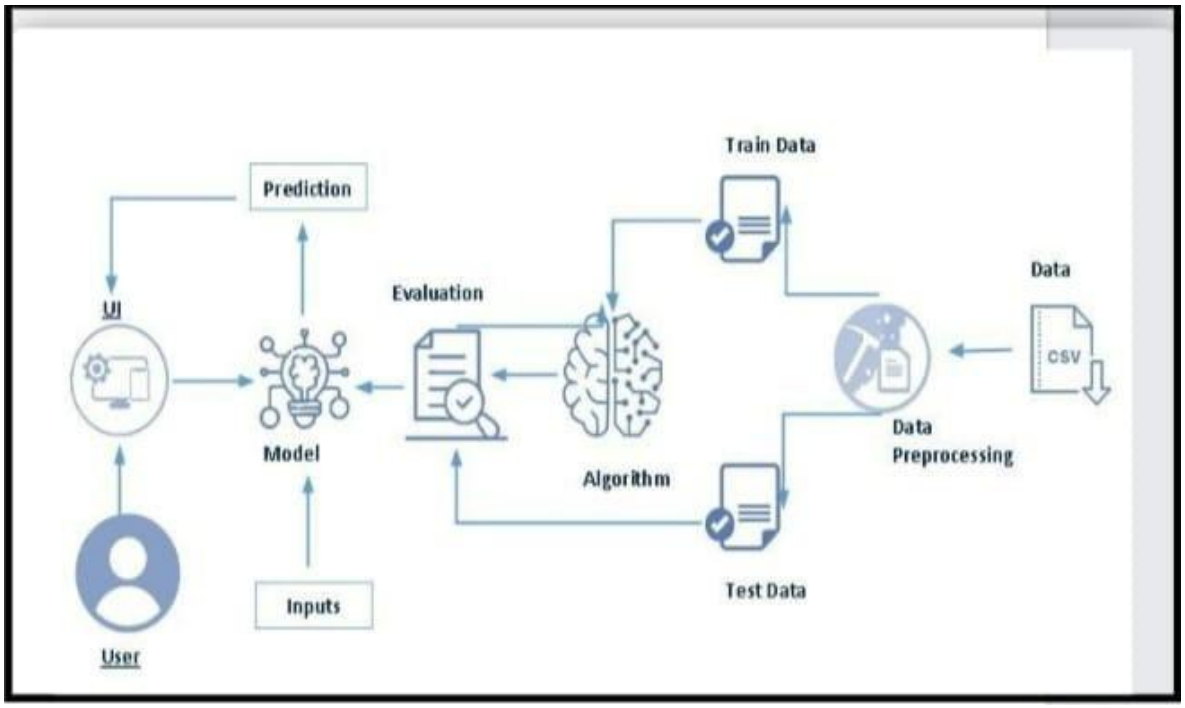


Fig 5.1 Flowchart of the project

Project Flow:

- User interacts with the UI (User Interface) to upload the input features.
- Uploaded features/input is analysed by the model which is integrated.

Once a model analyses the uploaded inputs, the prediction is showcased on the UI.

1. **Data Collection.**

- Collect the dataset or Create the dataset

2. **Data Pre- processing.**

- Import the Libraries.
- Importing the dataset.
- Exploratory Data Analysis
- Data Visualization

3. **Collaborating Filtering**

- Merging datasets
- Creating the Model
- Predicting the results
- Saving our model and dataset

4. **Application Building**

- Create an HTML file
- Build a Python Code

CHAPTER 6

RESULT

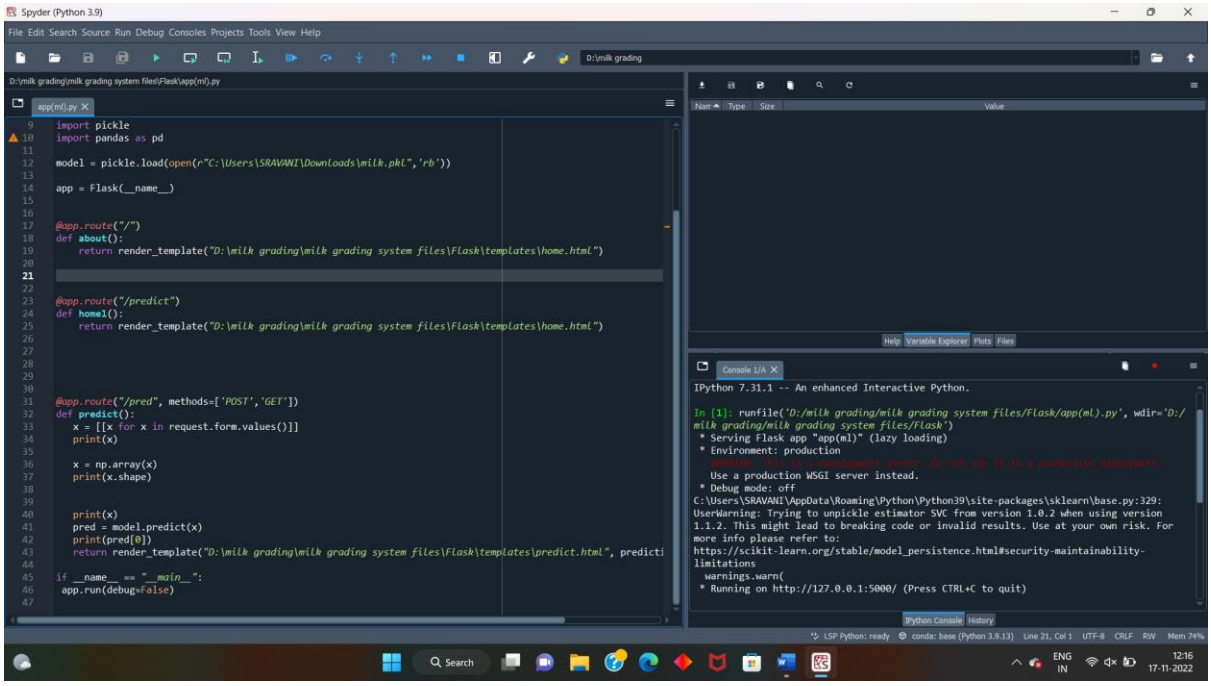


Fig 6.1 Flask App Code with Output Page

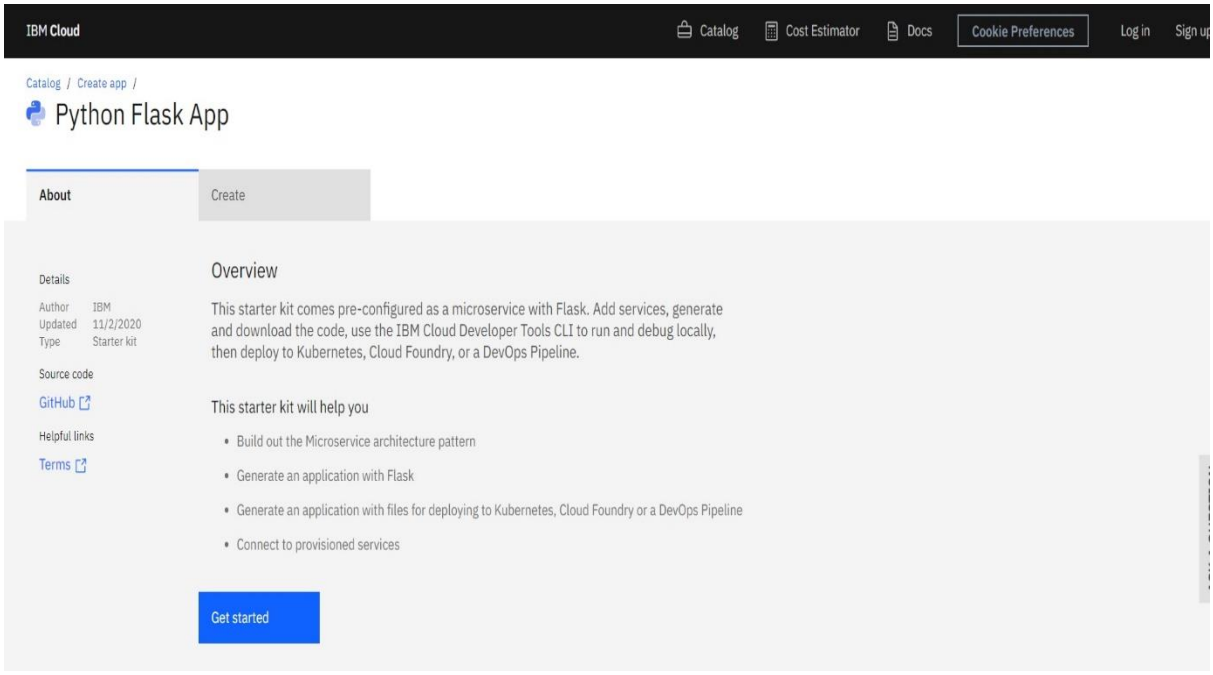


Fig 6.2 Uploading the Project of milk grading System using IBM Watson, In IBM

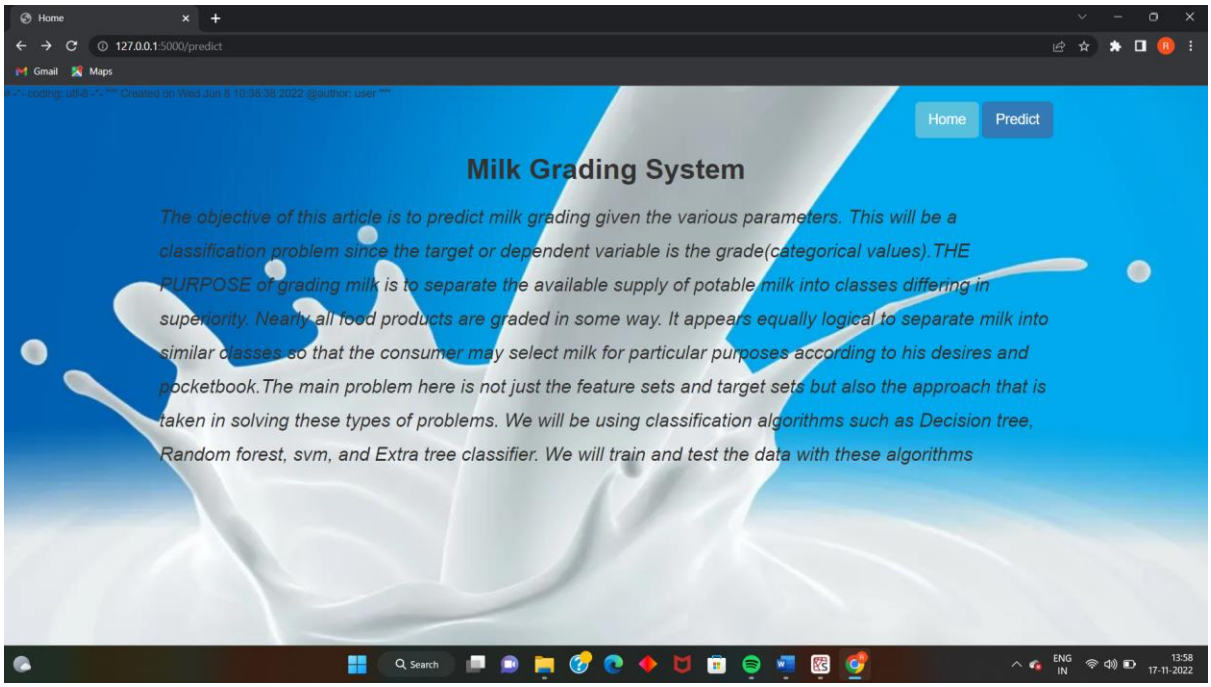


Fig 6.2 Home Page of milk grading System using IBM Watson, In IBM

Fig 6.3 Extractor page of Milk Grading System using IBM Watson

CHAPTER 7

ADVANTAGES AND DISADVANTAGES

ADVANTAGES

- It Not only is the milk cooled,but it is also stays cool.
- There A much smaller mechanical or much smaller mechanical refrigeration unit is required.

DISADVANTAGES

- It cools the milk very slowly.

- There is danger of milk contamination in case tank water enters milk-in-can.

CHAPTER

APPLICATIONS

- Due to the nutritive value of milk, its testing and quality control is an essential component of any milk processing industry whether small, medium or large scale.
- Milk is made up of 87% of water hence making it prone to adulteration by unscrupulous middlemen and unfaithful farmworkers.
- Milk processing allows the preservation of milk for days, weeks or months and helps to reduce food-borne illness.
- The usable life of milk can be extended for several days through techniques such as cooling (which is the factor most likely to influence the quality of raw milk) or fermentation.

CHAPTER 9

CONCLUSION AND FUTURESCOPE

CONCLUSION

- Salty: Salty taste, which may be present in milk from cows in the late stages of lactation, is often characteristic of milk from cows infected with mastitis. It is not

commonly found in herd milk or mixed milk received at a dairy plant. This defect cannot be detected by odor.

- Weedy: The weedy flavor is not included among the usual feed flavors. It generally has a bitter characteristic, varying with specific weeds of certain localities. It may include obnoxious flavors caused by such plants as ragweed, bitterweed, or peppergrass, and may become a very troublesome flavor defect. It can be eliminated or minimized by keeping cows away from weed-infested pastures or by not offering feeds containing such weeds until after the cow is milked.

FUTURESCOPE

- From carrying-pails, the milk is poured directly into cans through a strainer. When the can is full, it is gently lowered into a tank/trough of cooling water.

Enhancements that can be made in the future:

- Milk may be delivered to the milk plant or dairy in cans or tankers. The milk in these containers has to be graded, emptied, measured by weight or volume, sampled and bulked to provide continuity of supply to the pasteuring equipment.
- It is well known that the sanitary quality of milk on the receiving platform or dock depends on its background on the farm viz., healthy cows clean milk production, clean utensils, freedom from colostrum, prompt cooling and refrigerated transport. However, there is need for systematic and thorough inspection of all milk supplies everyday by conscientious and experienced milk graders.

CHAPTER 10

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APPENDIX

A Source Code of Flask:

```
from flask import Flask, request, render_template

# Flask-It is our framework which we are going to use to run/serve our application.
```

#request-for accessing file which was uploaded by the user on our application.

```
from flask import Flask, render_template, request
import numpy as np
import pickle
import pandas as pd

model = pickle.load(open(r"C:\Users\SRAVANI\Downloads\milk.pkl",'rb'))

app = Flask(__name__)



@app.route("/")
def about():
   return render_template("D:\milk grading\milk grading system files\Flask\templates\home.html")
@app.route("/predict")
def home1():
   return render_template("D:\milk grading\milk grading system files\Flask\templates\home.html")

@app.route("/pred", methods=['POST','GET'])
def predict():
  x = [[x for x in request.form.values()]]
  print(x)

  x = np.array(x)
  print(x.shape)
```

```
   print(x)

   pred = model.predict(x)

   print(pred[0])

   return render_template("D:\milk grading\milk grading system
files\Flask\templates\predict.html", prediction_text=str(pred))


if __name__ == "__main__":

 app.run(debug=False)
```