

```
In [1]: import pandas as pd
```

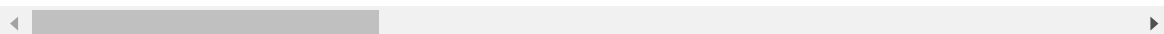
```
In [2]: dataset = pd.read_csv('C:/Users/91959/Downloads/datasets-mrs/Training.csv')
```

```
In [3]: dataset
```

```
Out[3]:
```

	itching	skin_rash	nodal_skin_eruptions	continuous_sneezing	shivering	chills	joint_p
0	1	1	1	0	0	0	
1	0	1	1	0	0	0	
2	1	0	1	0	0	0	
3	1	1	0	0	0	0	
4	1	1	1	0	0	0	
...
4915	0	0	0	0	0	0	
4916	0	1	0	0	0	0	
4917	0	0	0	0	0	0	
4918	0	1	0	0	0	0	
4919	0	1	0	0	0	0	

4920 rows × 133 columns



```
In [4]: # vals = dataset.values.flatten()
```

```
In [5]: dataset.shape
```

```
Out[5]: (4920, 133)
```

```
In [6]: from sklearn.model_selection import train_test_split
from sklearn.preprocessing import LabelEncoder
```

```
In [9]: X = dataset.drop('prognosis', axis=1)
        y = dataset['prognosis']

        # encoding prognosis
        le = LabelEncoder()
        le.fit(y)
        Y = le.transform(y)

        X_train, X_test, y_train, y_test = train_test_split(X, Y, test_size=0.3, ran
```

```
In [16]: from sklearn.datasets import make_classification
from sklearn.model_selection import train_test_split
from sklearn.svm import SVC
from sklearn.ensemble import RandomForestClassifier, GradientBoostingClassifier
from sklearn.neighbors import KNeighborsClassifier
from sklearn.naive_bayes import MultinomialNB
from sklearn.metrics import accuracy_score, confusion_matrix
import numpy as np

# Create a dictionary to store models
models = {
    'SVC': SVC(kernel='linear'),
    'RandomForest': RandomForestClassifier(n_estimators=100, random_state=42),
    'GradientBoosting': GradientBoostingClassifier(n_estimators=100, random_state=42),
    'KNeighbors': KNeighborsClassifier(n_neighbors=5),
    'MultinomialNB': MultinomialNB()
}

# Loop through the models, train, test, and print results
for model_name, model in models.items():
    # Train the model
    model.fit(X_train, y_train)

    # Test the model
    predictions = model.predict(X_test)

    # Calculate accuracy
    accuracy = accuracy_score(y_test, predictions)
    print(f"{model_name} Accuracy: {accuracy}")

    # Calculate confusion matrix
    cm = confusion_matrix(y_test, predictions)
    print(f"{model_name} Confusion Matrix:")
    print(np.array2string(cm, separator=', '))

    print("\n" + "="*40 + "\n")
```

SVC Accuracy: 1.0

SVC Confusion Matrix:

```
[[40,  0,  0, ...,  0,  0,  0],
 [ 0, 43,  0, ...,  0,  0,  0],
 [ 0,  0, 28, ...,  0,  0,  0],
 ...,
 [ 0,  0,  0, ..., 34,  0,  0],
 [ 0,  0,  0, ...,  0, 41,  0],
 [ 0,  0,  0, ...,  0,  0, 31]]
```

=====

RandomForest Accuracy: 1.0

RandomForest Confusion Matrix:

```
[[40,  0,  0, ...,  0,  0,  0],
 [ 0, 43,  0, ...,  0,  0,  0],
 [ 0,  0, 28, ...,  0,  0,  0],
 ...,
 [ 0,  0,  0, ..., 34,  0,  0],
 [ 0,  0,  0, ...,  0, 41,  0],
 [ 0,  0,  0, ...,  0,  0, 31]]
```

=====

GradientBoosting Accuracy: 1.0

GradientBoosting Confusion Matrix:

```
[[40,  0,  0, ...,  0,  0,  0],
 [ 0, 43,  0, ...,  0,  0,  0],
 [ 0,  0, 28, ...,  0,  0,  0],
 ...,
 [ 0,  0,  0, ..., 34,  0,  0],
 [ 0,  0,  0, ...,  0, 41,  0],
 [ 0,  0,  0, ...,  0,  0, 31]]
```

=====

KNeighbors Accuracy: 1.0

KNeighbors Confusion Matrix:

```
[[40,  0,  0, ...,  0,  0,  0],
 [ 0, 43,  0, ...,  0,  0,  0],
 [ 0,  0, 28, ...,  0,  0,  0],
 ...,
 [ 0,  0,  0, ..., 34,  0,  0],
 [ 0,  0,  0, ...,  0, 41,  0],
 [ 0,  0,  0, ...,  0,  0, 31]]
```

=====

MultinomialNB Accuracy: 1.0

MultinomialNB Confusion Matrix:

```
[[40,  0,  0, ...,  0,  0,  0],
 [ 0, 43,  0, ...,  0,  0,  0],
 [ 0,  0, 28, ...,  0,  0,  0],
 ...,
 [ 0,  0,  0, ..., 34,  0,  0],
 [ 0,  0,  0, ...,  0, 41,  0],
 [ 0,  0,  0, ...,  0,  0, 31]]
```

=====

```
In [17]: # selecting svc
svc = SVC(kernel='linear')
svc.fit(X_train,y_train)
ypred = svc.predict(X_test)
accuracy_score(y_test,ypred)
```

Out[17]: 1.0

```
In [18]: # save svc
import pickle
pickle.dump(svc,open('svc.pkl','wb'))
```

```
In [19]: svc = pickle.load(open('svc.pkl','rb'))
```

```
In [20]: # test 1:
print("predicted disease :",svc.predict(X_test.iloc[0].values.reshape(1,-1)))
print("Actual Disease :", y_test[0])
```

predicted disease : [40]
Actual Disease : 40

```
In [21]: # test 2:
print("predicted disease :",svc.predict(X_test.iloc[100].values.reshape(1,-1)))
print("Actual Disease :", y_test[100])
```

predicted disease : [39]
Actual Disease : 39

```
In [22]: sym_des = pd.read_csv('C:/Users/91959/Downloads/datasets-mrs/symtoms_df.csv')
precautions = pd.read_csv('C:/Users/91959/Downloads/datasets-mrs/precautions_df.csv')
workout = pd.read_csv('C:/Users/91959/Downloads/datasets-mrs/workout_df.csv')
description = pd.read_csv('C:/Users/91959/Downloads/datasets-mrs/description_df.csv')
medications = pd.read_csv('C:/Users/91959/Downloads/datasets-mrs/medications_df.csv')
diets = pd.read_csv('C:/Users/91959/Downloads/datasets-mrs/diets.csv')
```

```
In [24]: #=====
# custom and helping functions
#=====helper funtions=====
def helper(dis):
    desc = description[description['Disease'] == predicted_disease]['Description']
    desc = " ".join([w for w in desc])

    pre = precautions[precautions['Disease'] == dis][['Precaution_1', 'Precaution_2']]
    pre = [col for col in pre.values]

    med = medications[medications['Disease'] == dis]['Medication']
    med = [med for med in med.values]

    die = diets[diets['Disease'] == dis]['Diet']
    die = [die for die in die.values]

    wrkout = workout[workout['disease'] == dis] ['workout']

    return desc,pre,med,die,wrkout

symptoms_dict = {'itching': 0, 'skin_rash': 1, 'nodal_skin_eruptions': 2, 'itching_sweat_bursts': 3, 'skin_itch_rashes': 4, 'hives': 5, 'swelling': 6, 'redness': 7, 'sweat_bursts': 8, 'skin_itch_rashes': 9, 'hives': 10, 'swelling': 11, 'redness': 12, 'sweat_bursts': 13, 'skin_itch_rashes': 14, 'hives': 15, 'swelling': 16, 'redness': 17, 'sweat_bursts': 18, 'skin_itch_rashes': 19, 'hives': 20, 'swelling': 21, 'redness': 22, 'sweat_bursts': 23, 'skin_itch_rashes': 24, 'hives': 25, 'swelling': 26, 'redness': 27, 'sweat_bursts': 28, 'skin_itch_rashes': 29, 'hives': 30, 'swelling': 31, 'redness': 32, 'sweat_bursts': 33, 'skin_itch_rashes': 34, 'hives': 35, 'swelling': 36, 'redness': 37, 'sweat_bursts': 38, 'skin_itch_rashes': 39, 'hives': 40, 'swelling': 41, 'redness': 42, 'sweat_bursts': 43, 'skin_itch_rashes': 44, 'hives': 45, 'swelling': 46, 'redness': 47, 'sweat_bursts': 48, 'skin_itch_rashes': 49, 'hives': 50, 'swelling': 51, 'redness': 52, 'sweat_bursts': 53, 'skin_itch_rashes': 54, 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377, 'sweat_bursts': 378, 'skin_itch_rashes': 379, 'hives': 380, 'swelling': 381, 'redness': 382, 'sweat_bursts': 383, 'skin_itch_rashes': 3
```

```
In [25]: # Test 1
# Split the user's input into a list of symptoms (assuming they are comma-separated)
symptoms = input("Enter your symptoms.....")
user_symptoms = [s.strip() for s in symptoms.split(',')]
# Remove any extra characters, if any
user_symptoms = [symptom.strip("[]' ") for symptom in user_symptoms]
predicted_disease = get_predicted_value(user_symptoms)

desc, pre, med, die, wrkout = helper(predicted_disease)

print("=====predicted disease=====")
print(predicted_disease)
print("=====description=====")
print(desc)
print("=====precautions=====")
i = 1
for p_i in pre[0]:
    print(i, ": ", p_i)
    i += 1

print("=====medications=====")
for m_i in med:
    print(i, ": ", m_i)
    i += 1

print("=====workout=====")
for w_i in wrkout:
    print(i, ": ", w_i)
    i += 1

print("=====diets=====")
for d_i in die:
    print(i, ": ", d_i)
    i += 1
```

```
Enter your symptoms.....itching,skin_rash,nodal_skin_eruptions
=====predicted disease=====
Fungal infection
=====description=====
Fungal infection is a common skin condition caused by fungi.
=====precautions=====
1 : bath twice
2 : use detol or neem in bathing water
3 : keep infected area dry
4 : use clean cloths
=====medications=====
5 : ['Antifungal Cream', 'Fluconazole', 'Terbinafine', 'Clotrimazole', 'K
etoconazole']
=====workout=====
6 : Avoid sugary foods
7 : Consume probiotics
8 : Increase intake of garlic
9 : Include yogurt in diet
10 : Limit processed foods
11 : Stay hydrated
12 : Consume green tea
13 : Eat foods rich in zinc
14 : Include turmeric in diet
15 : Eat fruits and vegetables
=====diets=====
16 : ['Antifungal Diet', 'Probiotics', 'Garlic', 'Coconut oil', 'Turmeri
c']
```



```
In [26]: # Test 1
# Split the user's input into a list of symptoms (assuming they are comma-separated)
symptoms = input("Enter your symptoms.....")
user_symptoms = [s.strip() for s in symptoms.split(',')]
# Remove any extra characters, if any
user_symptoms = [symptom.strip("[]' ") for symptom in user_symptoms]
predicted_disease = get_predicted_value(user_symptoms)

desc, pre, med, die, wrkout = helper(predicted_disease)

print("=====predicted disease=====")
print(predicted_disease)
print("=====description=====")
print(desc)
print("=====precautions=====")
i = 1
for p_i in pre[0]:
    print(i, ": ", p_i)
    i += 1

print("=====medications=====")
for m_i in med:
    print(i, ": ", m_i)
    i += 1

print("=====workout=====")
for w_i in wrkout:
    print(i, ": ", w_i)
    i += 1

print("=====diets=====")
for d_i in die:
    print(i, ": ", d_i)
    i += 1
```

```

Enter your symptoms.....yellow_crust_ooze,red_sore_around_nose,small_den
ts_in_nails,inflammatory_nails,blisters
=====predicted disease=====
Impetigo
=====description=====
Impetigo is a highly contagious skin infection causing red sores that can
break open.
=====precautions=====
1 : soak affected area in warm water
2 : use antibiotics
3 : remove scabs with wet compressed cloth
4 : consult doctor
=====medications=====
5 : ['Topical antibiotics', 'Oral antibiotics', 'Antiseptics', 'Ointment
s', 'Warm compresses']
=====workout=====
6 : Maintain good hygiene
7 : Stay hydrated
8 : Consume nutrient-rich foods
9 : Limit sugary foods and beverages
10 : Include foods rich in vitamin C
11 : Consult a healthcare professional
12 : Follow medical recommendations
13 : Avoid scratching
14 : Take prescribed antibiotics
15 : Practice wound care
=====diets=====
16 : ['Impetigo Diet', 'Antibiotic treatment', 'Fruits and vegetables',
'Hydration', 'Protein-rich foods']

```

```

In [27]: # Let's use pycharm flask app
         # but install this version in pycharm
import sklearn
print(sklearn.__version__)

```

0.24.2

In []: