

High Level Document

Mushroom Classification Problem

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Abstract:-

In this project I am trying to make a web model which is able to classify and predict whether a mushroom is eatable or not.

Problem Statement:-

The Audubon Society Field Guide to North American Mushrooms contains descriptions of hypothetical samples corresponding to 23 species of gilled mushrooms in the Agaricus and Lepiota Family Mushroom (1981). Each species is labelled as either definitely edible, definitely poisonous, or maybe edible but not recommended. This last category was merged with the toxic category. The Guide asserts unequivocally that there is no simple rule for judging a mushroom's edibility, such as "leaflets three, leave it be" for Poisonous Oak and Ivy.

The main goal is to predict which mushroom is poisonous & which is edible.

Proposed Solution:-

As the data set does not provide any special feature, hence the entire 23 feature are taken to provide better accuracy without over fitting the model.

Several models are test against the data set such as logistic regression, support vector machine, decision tree, neural network etc.

At last Neural Network Model is selected to the project purpose.

Tools used:-

The tools and libraries which are used to solve the current problem are specified below.

- ✓ Python
- ✓ Jupiter Notebook
- ✓ Pandas
- ✓ Numpy
- ✓ Seaborn
- ✓ Streamlit
- ✓ VS Code
- ✓ Github
- ✓ Pickle

Process Flow:-

Start -> Data Collection -> Data pre-processing p ->
Data Visualization -> Feature Selection -> Testing Different
Models to get Best Model to Use -> Training & Testing -> Saving
Trained Model Using Pickle -> Integrating trained model with the front
end -> Final Testing ->Resolving Minor Issues -> Final
Deployment(END).

Performance:-

The performance of the system is very good and provides the accuracy of 100%.

It is a neural network based model hence it can be extended in future if required.

Error Handling:-

Efficient error handling is present in code.

Test is done over a long period to ensure that the predicted output matches with the actual without over fitting of the model.

Train–Test ratio is 80:20.

The model is error free.

Deployment:-

The project is scripted with python programming on visual studio code with Jupiter extension.

With the help of streamlit Library, I have deployed my model on my local host.

The Neural Network Model is giving 100% accuracy.

Conclusion:-

This project will classify that the mushroom is eatable or not with 100% accuracy.

The Model is based on Neural Network hence it can be extended whenever required.