

High Level Design (HLD)

**High Level Design (HLD)**  
**MUSHROOM CLASSIFICATION**

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# High Level Design (HLD)

## Table of Contents

<b>Abstract</b>	<b>3</b>
<b>Introduction..</b>	
• <b>Why this HLD Documentation</b>	<b>4</b>
<b>1 Description</b>	
<b>1.1 Problem Perspective.</b>	<b>4</b>
<b>1.2 Problem statement</b>	<b>4</b>
<b>1.3 Proposed Solution</b>	<b>4</b>
<b>1.4 Technical Requirements.</b>	<b>5</b>
<b>1.5 Data Requirements.</b>	<b>5</b>
<b>1.6 Tools Used.</b>	<b>6</b>
<b>1.7 Constraints.</b>	<b>7</b>
<b>1.8 Assumption</b>	<b>8</b>
<b>2 Design Flow</b>	
<b>2.1 model Process</b>	<b>8</b>
<b>2.2 Deployment Process</b>	<b>8</b>
<b>2.3 Logging</b>	<b>8</b>
<b>2.4 Error Handling</b>	<b>9</b>
<b>3 Performance Evaluation</b>	
<b>3.1 Reusability</b>	
<b>3.2 Application Compatibility.</b>	<b>9</b>
<b>3.3 Resource Utilisation.</b>	<b>9</b>
<b>3.4 Deployment</b>	<b>9</b>
<b>3.5 User Interface.</b>	<b>9</b>
<b>4 Conclusion..</b>	<b>10</b>

## High Level Design (HLD)

### Abstract

Mushrooms are a diverse group of fungi that play significant roles in various ecosystems and hold culinary and medicinal importance. However, the distinction between edible and poisonous mushrooms can be challenging due to their visual similarity. In this project, we propose a comprehensive approach to mushroom classification utilizing machine learning techniques. Our primary objective is to develop an accurate and reliable system capable of distinguishing between different mushroom species, particularly focusing on distinguishing toxic from non-toxic varieties.

# High Level Design (HLD)

## □ Introduction

### ● Why this High-Level Design Document?

The main purpose of this HLD documentation is to feature the required details of the project and supply the outline of the machine learning model and also the written code. This additionally provides the careful description on however the complete project has been designed end-to-end.

## Description

### 1.1 Problem Perspective

The Mushroom classification is a machine learning-based classification model which will help us to predict whether the mushrooms are edible or poisonous.

### 1.2 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.

# High Level Design (HLD)

## 1.3 Project Solution

Project requires the desired input of the user from the created interface and method and all the provided information to satisfy the wants of the machine learning model and at last show the expected output.

## 1.4 Technical Requirements

There are not any hardware needs needed for victimization this application, the user should have AN interactive device that has access to the web and should have the fundamental understanding of providing the input. And for the backend half the server should run all the package that's needed for the process and provided information to show the results.

## 1.5 Data Requirements

Data Requirement completely depend on our problem. For training and testing the model, we are using Mushroom Classification dataset that is provided by Ineuron Company.

From user we are taking following input:

- cap-shape
- Cap-surface
- cap-color
- bruises
- odor
- Gill-attachment
- Gill-spacing
- Gill-size
- Gill-color
- stalk-shape
- Stalk-root
- Stalk-surface-above-ring
- Stalk-surface-below-ring

## High Level Design (HLD)

Stalk-color-above-ring  
stalk-color-below-ring  
Veil-color  
ring-number  
Ring-type  
Spore-print-color  
population  
Habitat

### 1.6 Tools Used

- Python 3.8 is employed because the programming language and frame works like numpy, pandas, sklearn and alternative modules for building the model.
- Vscode is employed as IDE.
- For visualizations seaborn and components of matplotlib are getting used.
- For information assortment prophetess info is getting used.
- Front end development is completed victimization HTML/CSS.
- Flask is employed for each information and backend readying.
- GitHub is employed for version management.
- AWS beanstalk is employed for deployment



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### 1.7 Constraints

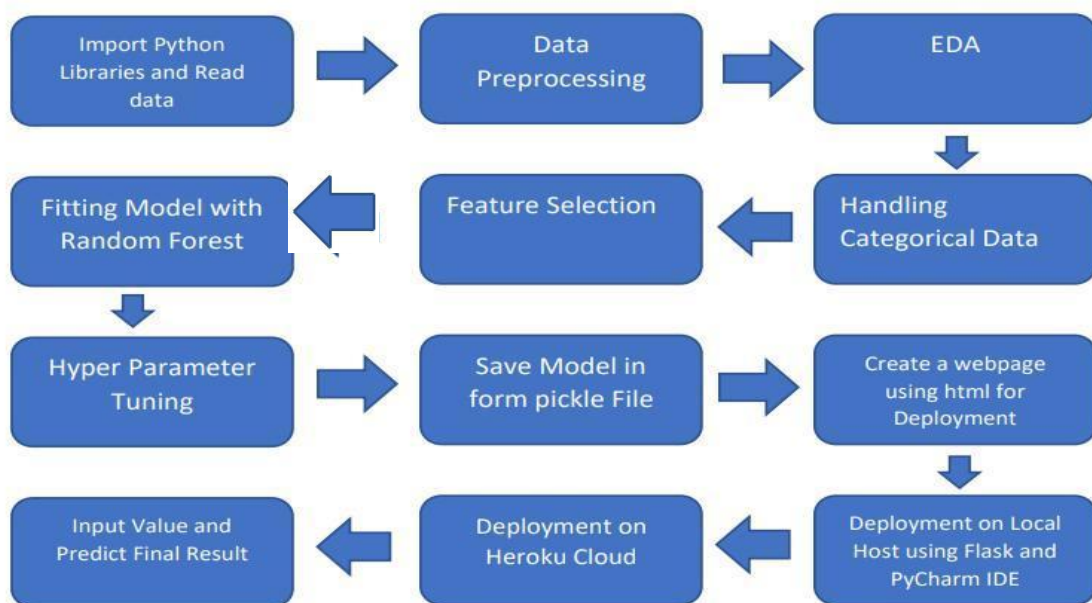
The flight fare prediction answer should be user friendly, as automatic as attainable and also the user should not be needed to understand any of the operating.

### 1.8 Assumptions

The most objective of the project is to implement the utilization cases as for the new dataset that user provides through the programme. Machine learning model is employed for process the on top of computer file. It's additionally assumed that each one aspects of this project have the flexibility to figure along within the approach as the designer is expecting.

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### 2.1 and 2.2 Design Flow and Deployment Process



### 2.3 Logging

Each step is being logged within the system that runs internally, that shows the date time and therefore the processed that has been performed, work is completed in several layers as information, DEBUG, ERROR, WARNINGS. this provides US the perceive of the logged info.



## High Level Design (HLD)

### 2.4 Error Handling

Once a slip has occurred, the reason is logged in its several log files, in order that the developer will rectify the error.

## 3 Performance analysis

### 3.1 Reusability

Elements of the code written are accustomed to different applications and therefore the rest is changed and reused.

### 3.2 Application Compatibility

The various parts for this project are exploitation python as an associate interface between them. every element can have its own tasks to perform, and it's the work of the python to make sure the transfer of data.

### 3.3 Resource Utilization

Once any task is performed, it'll doubtless; use all the process power offered till that performs is finished.

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### 3.4 Deployment

The model is being deployed on Aws elastic beanstalk.

### Conclusion

The Designed Mushroom classification will predict edible or poisonous mushrooms based on various data used to train our algorithm, so we can identify the intake in early stages and can take necessary action to stop them immediately