

Project Initialization and Planning Phase

Date	03 July 2024
Team ID	SWTID1720085445
Project Name	Hydration Essentials: Classifying Water Bottle Images
Maximum Marks	3 Marks

Project Proposal

Water Bottle Classification Tool for Busy Professionals:

Project Overview	
Objective	To develop an AI-powered classification tool that helps consumers quickly and accurately identify the most suitable water bottle based on their specific needs and preferences.
Scope	<ul style="list-style-type: none">• Develop a machine learning model capable of classifying water bottle images.• Create a user-friendly interface for consumers to upload and classify images.• Integrate detailed product information and recommendations based on classification results.• Ensure the tool can handle a wide variety of water bottle types and features.• Deploy the solution on both web and mobile platforms.

Problem Statement	
Description	Consumers face significant challenges in selecting the right water bottle due to the overwhelming variety of options available. This issue is compounded by inconsistent product information, conflicting reviews, and the time constraints of busy lifestyles.
Impact	Those above factors make it difficult for individuals to make informed purchasing decisions, leading to frustration and dissatisfaction.
Proposed Solution	
Approach	<p>1 Data Collection:</p> <ul style="list-style-type: none"> Gather a comprehensive dataset of water bottle images and metadata (material, size, features, brand). <p>2 Model Development:</p> <ul style="list-style-type: none"> Train a convolutional neural network (CNN) to classify water bottles into predefined categories. Use transfer learning with a pre-trained model (e.g., ResNet, VGG) for enhanced accuracy. <p>3 Interface Design:</p> <ul style="list-style-type: none"> Develop a web and mobile interface for users to upload water bottle images. Display classification results with detailed product information and recommendations. <p>4 Integration:</p> <ul style="list-style-type: none"> Integrate with e-commerce platforms for seamless purchasing options. Include user feedback mechanisms to continually improve the model.

Key Features	Image Upload and Classification: <ul style="list-style-type: none"> Simple, intuitive interface for uploading and classifying water bottle images.
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Resource Requirements:

Resource Type	Description	Specification Allocations
Hardware		
Computing Resources	CPU specifications, No. of cores	No. of cores : 10 No. of Logical processors : 12
Memory	RAM specifications	16 GB
Storage	Disk space for data , models, and logs	1 TB SSD
Software		
Frameworks	Python Frameworks	Flask
Libraries	Additional Libraries	Scikit-learn, pandas, numpy
Development Environment	IDE, Version Control	Jupyter notebook , git

Data

Data is collected from the **Kaggle datasets**.