

Project Initialization and Planning Phase

Date	20 June 2024
Team ID	SWTID1720428909
Project Title	Vitamin Vision: Unveiling the Spectrum of Nutrient Detection
Maximum Marks	3 Marks

Project Proposal (Proposed Solution) template

This project proposal outlines a solution to address a specific problem. With a clear objective, defined scope, and a concise problem statement, the proposed solution details the approach, key features, and resource requirements, including hardware, software, and personnel.

Project Overview	
Objective	I want to create an application which focuses on utilizing advanced analytical techniques and technologies to accurately identify and quantify the presence of various vitamins in samples to ensure the quality and safety of products, verify nutritional content, and support research in health and wellness.
Scope	<ul style="list-style-type: none"> Design and develop advanced analytical methods using chromatography and spectroscopy. Develop and integrate machine learning algorithms for enhanced data analysis. Ensure methods are robust, reproducible, and validated for accuracy.
Problem Statement	
Description	The "Vitamin Vision" project addresses the need for precise and reliable methods to identify and quantify vitamins in various samples such as food, supplements, and biological fluids. Current challenges in quality control, nutritional research, and regulatory compliance require advanced analytical techniques to ensure product safety, verify nutritional content, and support health studies. By employing chromatography, spectroscopy, and machine learning, this project aims to enhance consumer trust, support regulatory bodies, and enable personalized nutrition plans through accurate vitamin detection and quantification.
Impact	<ul style="list-style-type: none"> Deploy analytical methods in quality control labs for routine vitamin testing.

	<ul style="list-style-type: none"> • Provide tools and protocols for nutritional researchers to analyse biological samples. • Establish and maintain high standards of accuracy, precision, and reliability
Proposed Solution	
Approach	Use analytical methods such as: Chromatography, Spectroscopy, and Machine learning in order to identify and verify nutritional content.
Key Features	Jupyter notebook, VS code, Spyder, Google colab and Flask framework.

Resource Requirements

Resource Type	Description	Specification/Allocation
Hardware		
Computing Resources	CPU/GPU specifications, number of cores	11th Gen Intel Core i5-11400H @ 2.70GHz 1 x NVIDIA RTX3050ti GPUs
Memory	RAM specifications	16 GB
Storage	Disk space for data, models, and logs	1.5 TB SSD
Software		
Frameworks	Python frameworks	Flask
Libraries	Additional libraries	tensorflow
Development Environment	IDE, version control	Google colab, Git, Spyder
Data		
Data	Source, size, format	Kaggle dataset, 8968 images