

Project Name: Fake Drug Detection

Group members' name

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Project idea

The increasing prevalence of counterfeit drugs poses a significant threat to public health, safety, and trust in healthcare systems worldwide. Traditional methods of detecting fake drugs, such as laboratory testing and visual inspection, are often time-consuming, expensive, and not feasible for widespread use. This creates a pressing need for an accessible, efficient solution to identify counterfeit medications quickly and reliably.

The goal of this project is to develop a cost-effective and user-friendly detection system that leverages advanced technologies, to identify counterfeit drugs in real-time. To achieve this goal, the project will create a robust detection algorithm that accurately differentiates between genuine and counterfeit drugs, develop an app for easy use in various settings.

Relevance to Sustainable Development Goals (SDGs)

The Fake Drug Detection Project is relevant to the Sustainable Development Goals (SDGs), particularly Goal 3, which aims to ensure healthy lives and promote well-being for all. By providing a reliable method to detect counterfeit drugs, the project contributes to improving health outcomes, reducing the incidence of drug-related harm. Additionally, it supports Goal 9 by fostering innovation in health technology and promoting sustainable industrialization through the development of advanced detection tools. Ultimately, the project aims to strengthen the resilience of healthcare systems and improve access to safe medications for vulnerable populations.

Literature review

1. "Fast Detection and Identification of Counterfeit Antimalarial Tablets by Raman Spectroscopy": This study focuses on the application of Raman spectroscopy for the rapid detection and identification of counterfeit antimalarial drugs.

2. "Blockchain Technology for Detecting Falsified and Substandard Drugs in Distribution: Pharmaceutical Supply Chain Intervention": This research proposes a blockchain-based system designed to enhance the traceability and verification of drugs throughout the supply chain.

Data description

This project used 2 main types of data: Image Data for Visual detection and Text data for OCR Validation. We plan to use manually collected or scraped Images from public health organization report and trusted pharmaceutical websites. We will also include supplemented data by simulation counterfeit version by altering text, logos or adding blurring effects.

Approach

For this project, we chose a machine learning approach due to its simplicity and interpretability, making it easier to understand the decision-making process. It performs well with smaller datasets, requires fewer computational resources, and has faster training times compared to deep learning. Additionally, effective manual feature selection can enhance model performance without the complexity of deep learning, making it a suitable option for this project.