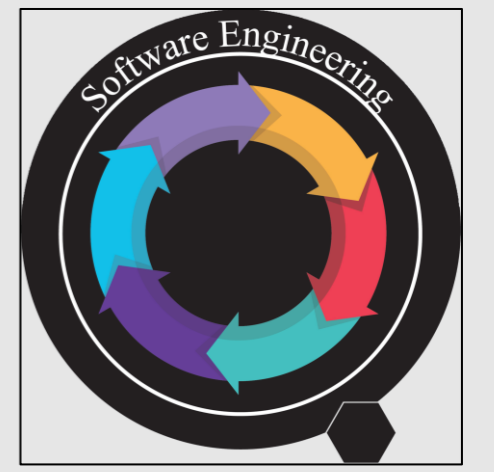# LABELYZER

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Abstract

The Labelyzer project is a web-based application designed to streamline the product entry process for online clothing retailers through advanced AI and machine learning technologies. By enabling automatic recognition, categorization, and tagging of clothing items from uploaded images, the system enhances efficiency and accuracy in managing large inventories. The application aims to provide a competitive edge to e-commerce businesses by optimizing operations, improving user experience, and ensuring secure, reliable performance.

Introduction

The manual process of labeling and categorizing clothing items in online stores is time-consuming, error-prone, and inefficient, leading to delays in product listings and inconsistencies in categorization. Existing solutions for product labeling in e-commerce rely heavily on manual data entry or simplistic tagging systems that fail to leverage the full potential of modern AI technologies. The Labelyzer project addresses these challenges by developing a web-based application that utilizes AI to automate the recognition, categorization, and tagging of clothing items.

Solution

The solution to manual clothing labeling involves developing an automated system using AI and machine learning. Convolutional Neural Networks (CNNs) with the ResNet architecture classify and label clothing items from images. Features are extracted by CNNs and categorized using multi-class classification algorithms to differentiate between clothing types, textures, colors, and attributes. The system generates relevant tags for each item and uses the Gemini API for styling suggestions. Robust quality control ensures accuracy, and the architecture supports bulk image uploads for scalability and efficiency.
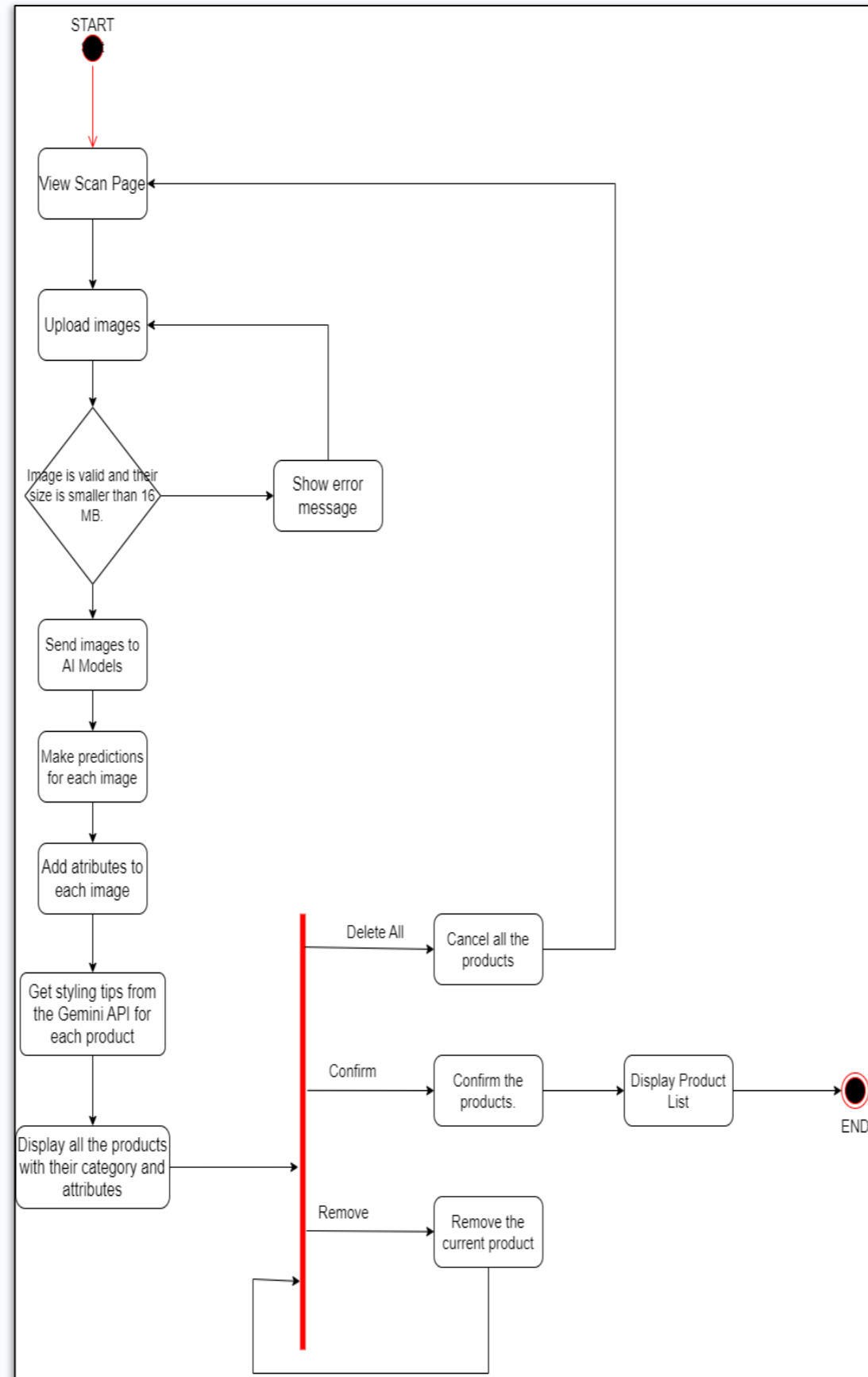
Company Info

Labelyzer revolutionizes product entry for online clothing stores with an automated system for recognizing and categorizing items. Targeted at e-commerce businesses—from large retailers like Amazon and Zalando to boutique stores and fashion tech startups—the application enhances efficiency and accuracy in managing product data, streamlines inventory management, and reduces manual effort, providing competitive advantages in the fast-paced e-commerce sector.

Results & Conclusion

Labelyzer improved efficiency and accuracy in product entry for online clothing stores using AI-driven categorization and machine learning. It reduced listing time, minimized errors, and received positive feedback for its user-friendly interface and seamless integration. The project highlighted AI's value in e-commerce and the need for continuous machine learning training. Future enhancements include scalability, advanced features, and broader market adoption, with further research needed to refine models, improve the UI, and ensure wider platform integration.

Acknowledgement