

# Automated Image Segmentation and Object Analysis Pipeline Using Deep Learning Models

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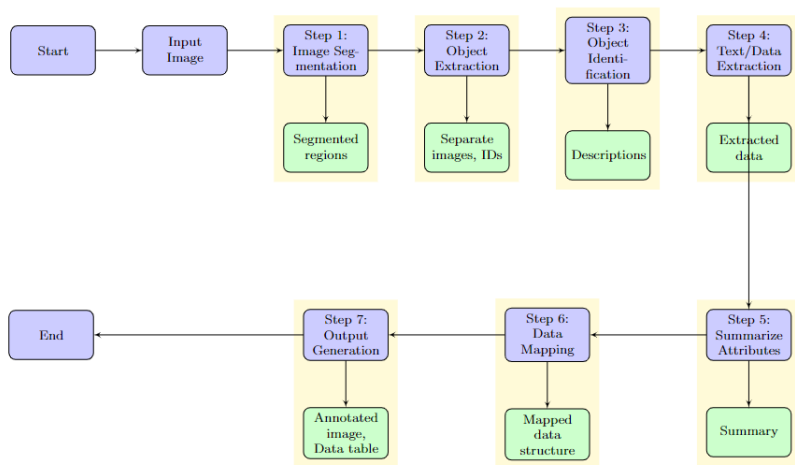
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# Project Overview

- Development of an AI-powered image processing pipeline
- Focus on segmentation, identification, and analysis of objects within images
- Integration of multiple AI models and techniques

# Flowchart



# Key Objectives

- 1 Segment all objects within input images
- 2 Extract and store individual objects with unique identifiers
- 3 Identify and describe each object in real-world terms
- 4 Extract text or data from object images
- 5 Summarize attributes of each object
- 6 Map extracted data to objects and master images
- 7 Generate comprehensive output with visual and tabular components

# Object Segmentation

- Utilize advanced AI segmentation models
- Accurately isolate individual objects within complex images
- Handle varying lighting conditions and occlusions

# Object Extraction and Storage

- Create separate image files for each segmented object
- Assign unique identifiers to extracted objects
- Maintain link between objects and original master image

# Object Identification and Description

- Employ state-of-the-art object recognition models
- Generate detailed descriptions of each object
- Provide context-aware identification when possible

# Text and Data Extraction

- Implement Optical Character Recognition (OCR) for text extraction
- Detect and interpret data visualizations (charts, graphs)
- Extract relevant numerical or categorical data from objects



# Attribute Summarization

- Compile key attributes for each object
- Summarize visual characteristics (color, shape, size)
- Aggregate extracted text and data into concise summaries

# Data Mapping

- Create data structures linking objects, attributes, and master images
- Develop efficient storage and retrieval mechanisms
- Ensure data consistency and integrity across the pipeline

# Output Generation

- Produce annotated master images highlighting identified objects
- Generate comprehensive data tables with object details
- Create visual reports summarizing pipeline results

# Next Steps

- Refine individual AI models for improved accuracy
- Optimize pipeline for processing speed and efficiency
- Develop user interface for easy interaction with the system
- Conduct extensive testing with diverse image datasets

# Thank You