

Image Processing System

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1. Introduction

The Image Processing System is designed to handle and process image data from uploaded CSV files. The system reads image URLs from the CSV, processes the images to reduce their size, stores information about the images and their processing status, and allows users to check the status and download a result CSV with processed image URLs.

2. Architecture Overview

High-Level Architecture:

- The system consists of a frontend application built with React.js, a backend service powered by Node.js with Express, and a SQLite database for data persistence.
- The frontend allows users to upload CSV files and view the status of processing.
- The backend handles file uploads, processes images, stores data, and serves processed image links via an API.

3. Component Details

Frontend (React.js)

Role: Manages user interactions, displays the user interface, and sends requests to the backend.

Functions:

- File upload interface.
- Display processing status.
- Offer download links for the output CSV.

Backend (Node.js with Express)

Role: Handles business logic, processes API requests, manages image processing, and interacts with the database.

Functions:

- API endpoints for file upload, status checks, and CSV exports.
- Image processing logic.
- Database operations.

Database (SQLite)

Role: Stores data about products, images, processing status, and requests.

Functions:

- Maintain records of each product and its associated images and processing status.

4. Database Schema

Tables:

Products:

- id: INTEGER, PRIMARY KEY, AUTOINCREMENT
- serial_number: TEXT
- product_name: TEXT
- input_urls: TEXT
- output_urls: TEXT
- request_id: TEXT
- status: TEXT

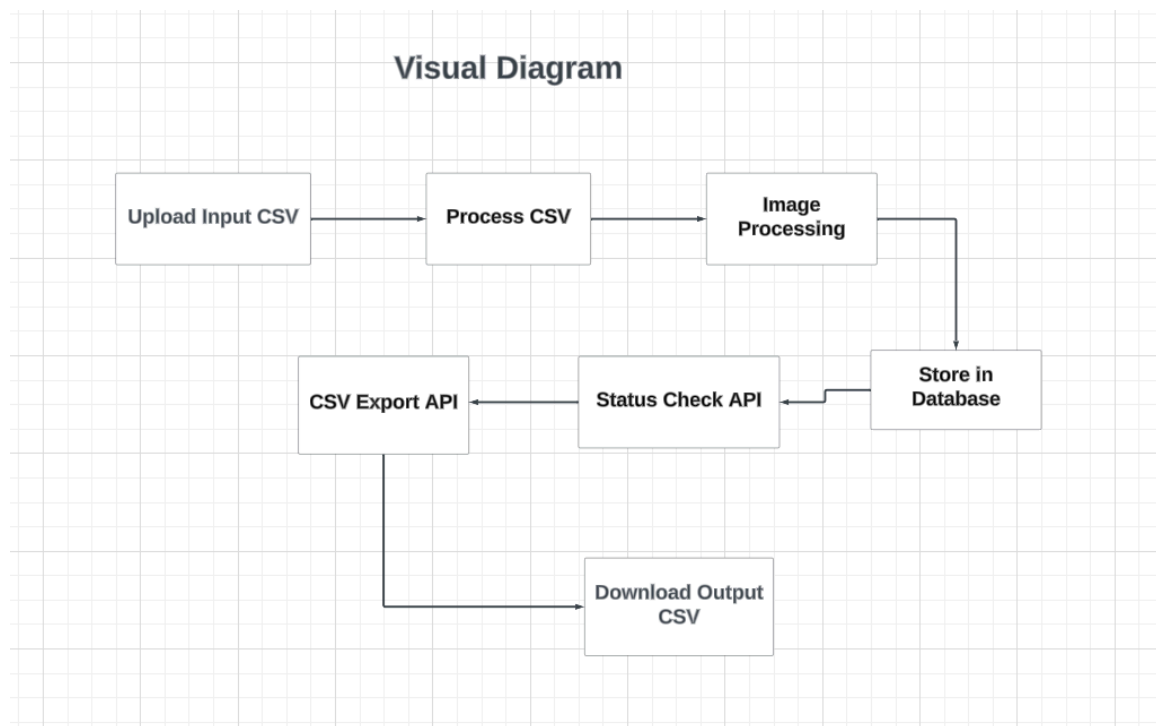
5. Process Flow Diagrams

Upload and Processing Flow:

- Diagram showing the flow from CSV upload, image processing, to database storage.

Status Checking and Export Flow:

- Diagram illustrating how the status check and CSV export functionalities work.



6. API Endpoints

/api/upload: Handles CSV file uploads.

/api/status/{requestId}: Provides the processing status for a given request.

/api/export: Allows downloading of the output CSV file.