Multi-Tier Image Processing System

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Overview

This project implements a multi-tier architecture for a image processing system. The system allows users to upload, download, and process images through a web-based frontend. The backend handles all computationally intensive tasks such as image resizing, conversion, thumbnail generation, and filtering. A PostgreSQL database is used to store metadata for both uploaded and processed images, while the local file storage maintains the actual image files.

Architecture

The architecture follows a three-tier design pattern:

- **Client Tier:** Consists of frontend interface and users. Users can upload images, request operations, and download results.
- **Application Tier:** The backend server manages all image processing operations using worker pools and processing modules.
- **Data Tier:** Responsible for persistent storage. The PostgreSQL database stores metadata, while disk storage maintains the original and processed image files.

Architecture Diagram

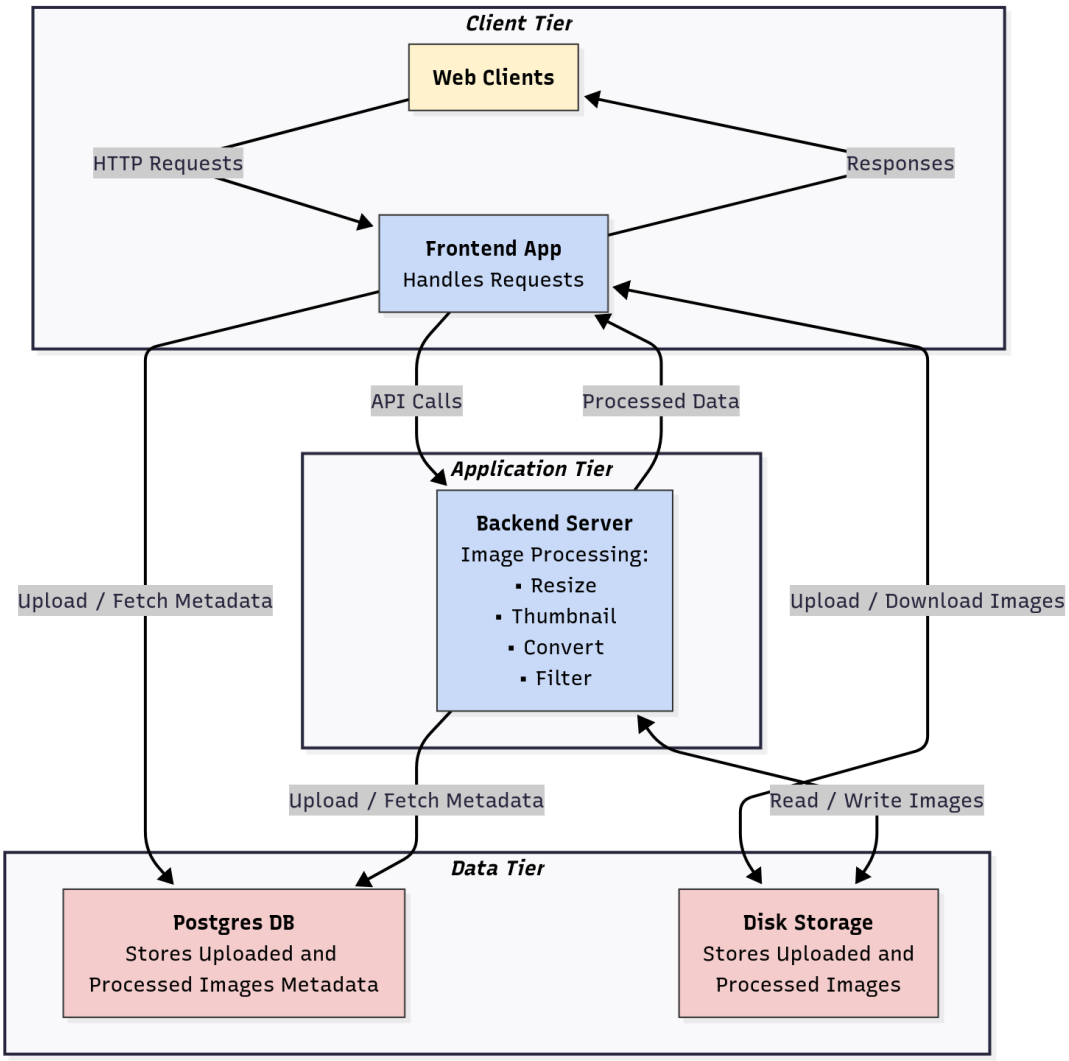

Figure 1: System Architecture Diagram

Key Features

- Supports multiple image operations: resize, convert, thumbnail generation, and filtering.
- Use of worker pool to manage concurrent processing.
- RESTful communication between frontend and backend.
- PostgreSQL for reliable metadata management.

Github-link

https://github.com/amandeep2102/Image_Processor