**APTARA**

Alt-Text-Generartor

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# Overview

The proposed project aims to develop a comprehensive tool that automatically generates descriptive alt text for images embedded in HTML pages. This tool will streamline the process of improving web accessibility by ensuring all images have appropriate alt text, which is essential for visually impaired users and improves search engine optimization (SEO). The tool will be designed to identify images, extract relevant contextual information from the surrounding HTML, and generate alt text using image recognition technologies and user-selected image parts.

# Goals

1. To create a **Node.js and React-based web application** that allows users to upload HTML pages and automatically generate meaningful alt text for images.
2. To integrate with modern **image recognition APIs** (e.g., Google Vision, Microsoft Azure) for high-quality alt text generation.
3. To enable users to manually select specific parts of images for focused alt text generation, improving the relevance of the description.
4. To improve web accessibility by providing descriptive alt text for both general and specific image content.

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# Support for multiple input formats:

* Individual image selection (for quick image processing).
* Multiple images selection (bulk image processing).
* ZIP file uploads that contain both HTML files and images.

# Key Features:

**HTML File Parsing**: Automatically scan and extract image src attributes and surrounding text for context using cheerio.

**Image Processing**:

* Support for both remote images (URLs) and locally referenced images in HTML files.
* Use of libraries like sharp to handle image manipulation (e.g., cropping, resizing) for selected parts of images.

**Alt Text Generation**: Leverage **image recognition APIs** to generate alt text based on full images or specific regions selected by the user.

**User Interaction**:

* Frontend will allow users to upload HTML files and manually crop images via an interactive UI.
* Display generated alt text for review, with options for manual edits.

**Download Updated HTML**: Users can download an updated version of the HTML file with generated alt text inserted into the img tags.

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# Technical Approach:

**Frontend (React)**:

* A user-friendly interface for uploading HTML files and reviewing/editing alt text.
* Integration with **react-cropper** for selecting specific image regions.
* Preview of images with generated alt text.

**Backend (Node.js)**:

* Parsing of HTML files to extract images and contextual information using **cheerio**.
* Processing images for selected regions using **sharp** and generating alt text by calling external image recognition APIs.
* Dynamic file handling for both remote and local image sources.

# Target Audience:

* **Web developers** and **content creators** looking to improve web accessibility and SEO.
* **Accessibility experts** who need tools for generating descriptive alt text.
* **Website administrators** maintaining sites with large amounts of media content.

# Benefits:

* **Improved Accessibility**: Ensuring all images on a webpage have meaningful alt text improves access for visually impaired users.
* **SEO Optimization**: Search engines favor pages with well-described media content, boosting website rankings.
* **Time Efficiency**: Automating the process of generating alt text significantly reduces manual labor.