Title: Interactive Color Detection and Identification.

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Objective:

The objective of this project is to develop a color detection application using OpenCV and Python. The application allows users to select colors from an image by double-clicking on a pixel and displays the name of the closest matching color along with its RGB values.

Outcomes:

- Successful color detection and identification.
- Real-time color selection and updates.
- Accurate color matching algorithm.
- User-friendly graphical interface.
- Visual representation of selected colors.
- Handling of light colors for better visibility.

Architecture:

- User input: Image path provided through the command line.
- Image processing: OpenCV used for reading and storing the image.
- Color dataset: CSV file with color names and RGB values imported using Pandas.
- Mouse interaction: Mouse callback function captures double-click event and extracts RGB values.
- Color matching: RGB values compared with dataset to find closest matching color.
- Visualization: Display selected color, name, and RGB values on the image.
- Real-time update: Continuous waiting for user interaction to select colors from different image areas.

Conclusion:

In summary, the color detection project successfully creates an interactive tool for identifying colors in images using OpenCV and Python. The tool accurately detects and displays the closest matching color along with its RGB values. Potential areas for improvement include incorporating additional color datasets and optimizing the color matching algorithm. The developed tool has practical applications in image processing, design, and visual analytics. It serves as a foundation for future advancements in color analysis and computer vision.