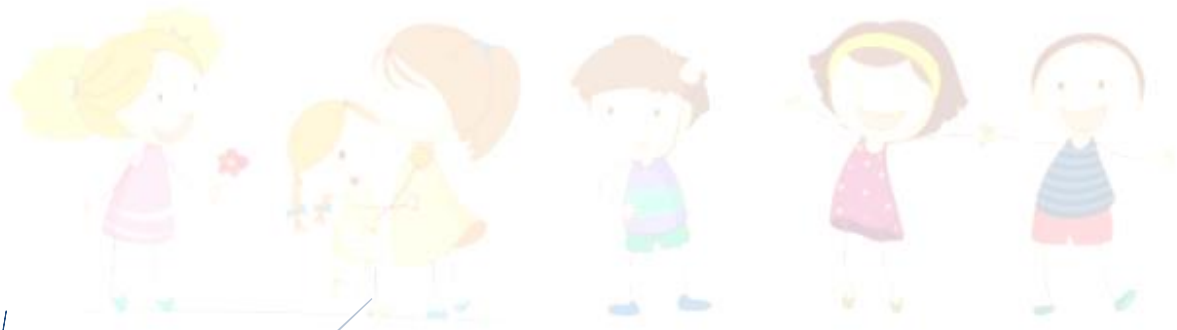
AIDI 2005

PixieSketch

Final Report



Team Members:

Tech-Lead: 100951266 Megha Rajesh Vala;
Team Member: 100902331 Mayank Taya;
Team Member: 100905899 Vybhav Thalikandathi

FINAL PROJECT REPORT: PIXIESKETCH

Introduction

This report is going to present the development of a site for children that allows them to turn their pictures into sketches and color them. The main aim was to make an interactive digital art platform that would be simple enough for kids to explore their creativity. It is hosted on Render, developed over four months by a dedicated team using Flask, Python and OpenCV.

Project Objectives

Project's Main Objectives:

1. Develop a Kid-Friendly UI/UX: A website with well-documented interface, lots of buttons and easy navigation specifically made for young users.
2. Implement Image to Sketch Conversion: Allow users' pictures to be transformed into black-and-white or colorful sketches.
3. Incorporate Advanced Sketch Customization: Let the user change his/her sketch's intensity, stroke size, and style.
4. Support Voice Commands: Introduce basic voice commands which will not only improve accessibility but also ease usability.
5. Ensure Cross-Device Compatibility: Make sure that it works perfectly on different devices such as PCs, mobiles and tablets
6. Deploy the Website via Render: Deploy the website through Render for its scalability as well as reliability purposes

Development Process

1. Stack of Technologies

- **Flask and Python**: They were chosen for backend development because they are simple and flexible in dealing with web requests, sessions, managing and integrating with OpenCV for image processing.
- **Open CV**: It has been used to perform basic image processing such as converting the images to black and white sketches and adding different effects like pencil drawing.
- **Render**: The website was deployed on this platform to enable easy management, scalability, and high availability.

2. Core Features

- **Image Upload & Processing**: The website supports image uploads from various devices. To obtain the best sketch conversion outcomes, a basic pre-processing such as resizing and normalization was implemented.
- **Pencil Sketch Conversion**: Users can turn uploaded images into greyscale or colored sketches. It is designed for quick conversions that provide feedback directly to users instantly after uploading their pictures.
- **Basic UI/UX**: A user-friendly interface was developed via large colourful buttons as well as intuitive navigation thereby providing a visual feedback leading the users through actions. Besides, the site caters for audio-visual feedback helping kids get entertained while using it.
- **Voice Commands**: Simple voice commands like ‘start’, ‘stop’ or ‘save’ had been introduced so that users could operate hands-free while making it easier to use for young audience of the website.

3. Advanced Features

- **Enhanced Sketch Customization**: allows users to increase or decrease the lightness and thickness of pencil strokes. In addition, more styles of pencils such as charcoal and shading were added for greater creative choices.
- **Advanced Image Editing**: When a sketch is ready, it can be exported for further editing in MS Paint or other drawing applications.

Deployment and Hosting

The website was built using Render which provides a reliable scalable hosting solution. Render was chosen because it is easy to use, has automated deployments and can handle the traffic expected for the platform. The deployment process involved continuous integration and delivery (CI/CD) practices to ensure that updates and improvements could be made efficiently without disrupting the user experience.

Testing and Feedback

The website underwent extensive testing across different devices to ensure its performance and user experience remained consistent. Invaluable feedback came from focus group of kids aged between six to twelve that helped in fine-tuning the user interface and overall experience. Insights here included need for bigger buttons, more lively colors, simple instructions.

Conclusion

The plan was a success and one of the results is an image to sketch converter that enables children to be creative by engaging in drawings. The combination of Flask, Python, and OpenCV was found to be the most effective technology stack while Render provided reliable hosting. A child-friendly user interface accompanied by advanced sketch customization as well as basic voice command features make sure that the site is easy-to-use for kids.

After four months of work, the team is satisfied with what they have achieved so far and is looking forward to adding more sophisticated editing options and increasing the range of voice commands available.