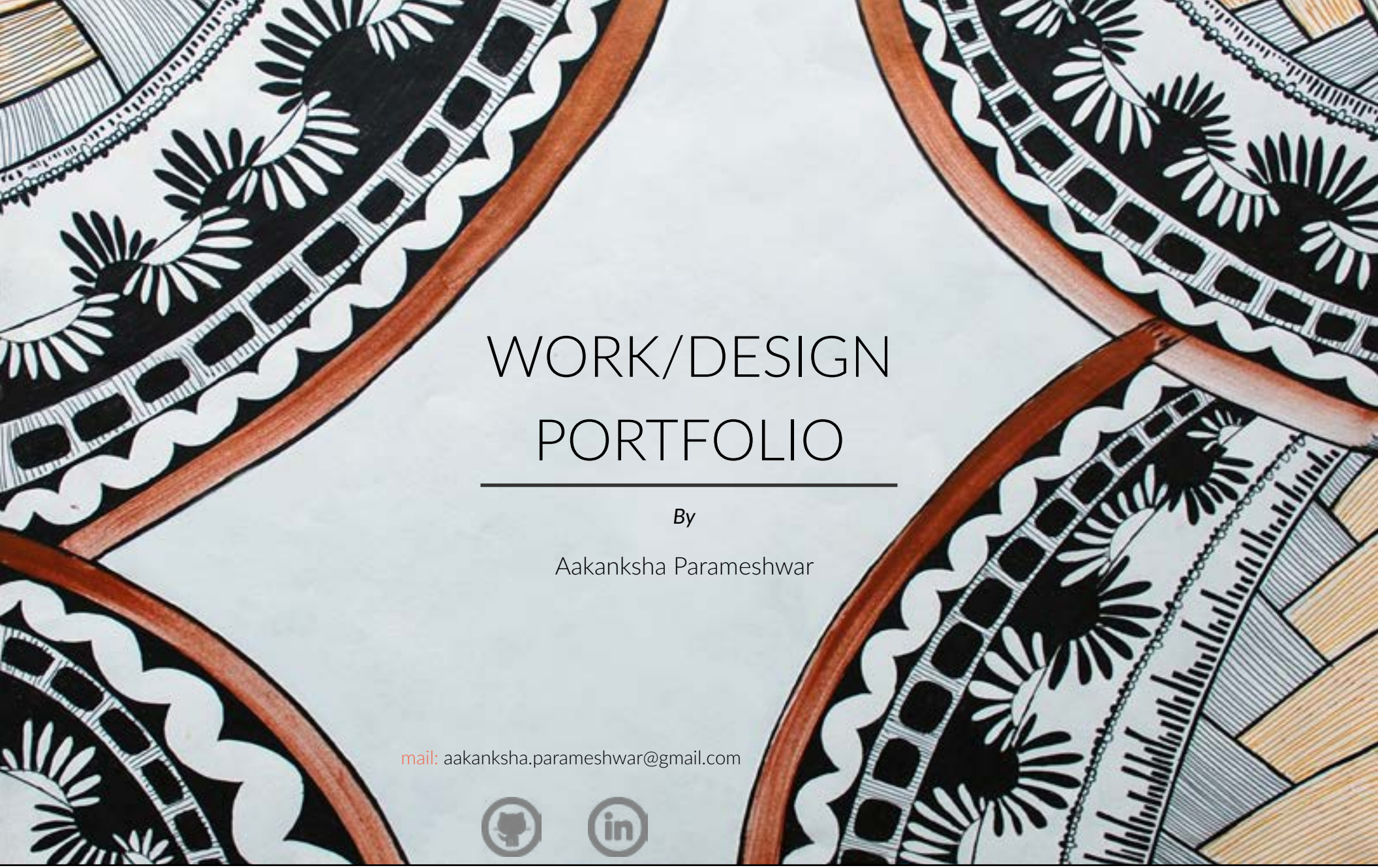

WORK/DESIGN PORTFOLIO

By

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mail: aakanksha.parameshwar@gmail.com

"I certify that the work included in this portfolio is my own original work. Work included which was conducted as part of a team or other group is indicated and attributed as such-the other team members are named and a true description of my role in the project is included."

Signature

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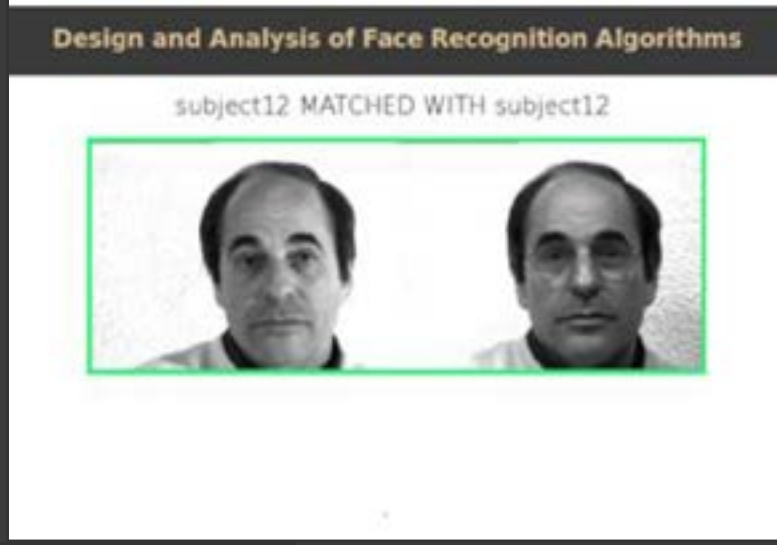
ANALYSIS AND DESIGN OF VARIOUS FACE RECOGNITION ALGORITHMS

This was a final year project implemented by a team of two (Myself and my friend Bharath M. S). The idea behind this project was to provide the users a platform to test, analyse and comapre various face recognition algorithms based on how effectively each of them overcame the challenges of face recognition. The challenges being Occlusion, Expression, Illumination, Age and Pose. We implemented four algorithms namely: Principal Component Analysis (PCA), Linear Discriminant Analysis (LDA), Scale Invariant Feature Transform (SIFT) and Line Edge Map (LEM) and documented our analysis in two survey papers based on the challenges (like Age, Pose).

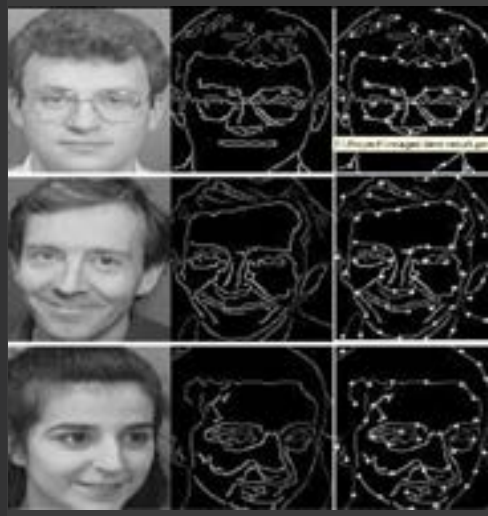
We developed two UI's for this application, one using Tkinter and the other using Flask web framework, but since the latter was more appealing we ended up using it to run our application. On each algorithm, we provided the user with various test cases like 'Expression test', 'Glasses test' and 'Pose test' among others so as to analyse the performance of an algorithm under such constraints. We also provided a 'Single image test' feature where a user can choose an image from the database and check how the algorithms match it with a face image in the database.

The output was a combination of image from training set and testing set and we used libraries like Matplotlib and PIL to plot the first 10 hits/miss (of a match) into a single image for easier presentation in the UI.

I implemented LEM and LDA algorithms while my teammate worked on the other two algorithms.



Algorithm	Total images matched	Accuracy (%)	Total time taken to match	Time taken to match single image
PCA	68	90.66	0.480s	0.006s
LDA	64	85.33	0.319s	0.004s
SIFT	75	100	2m 20s	1.871s
LEM	66	88	4m 46s	3.737s
Length of training set			30	
Length of testing set			75	



(top) *Results of a single image test using LEM algorithm on YALE database*
(bottom-left) *Intermediate image transformations performed to extract features from a face for LEM algorithm*
(bottom-right) *Tabulated results for each algorithm for general test performed for YALE database*

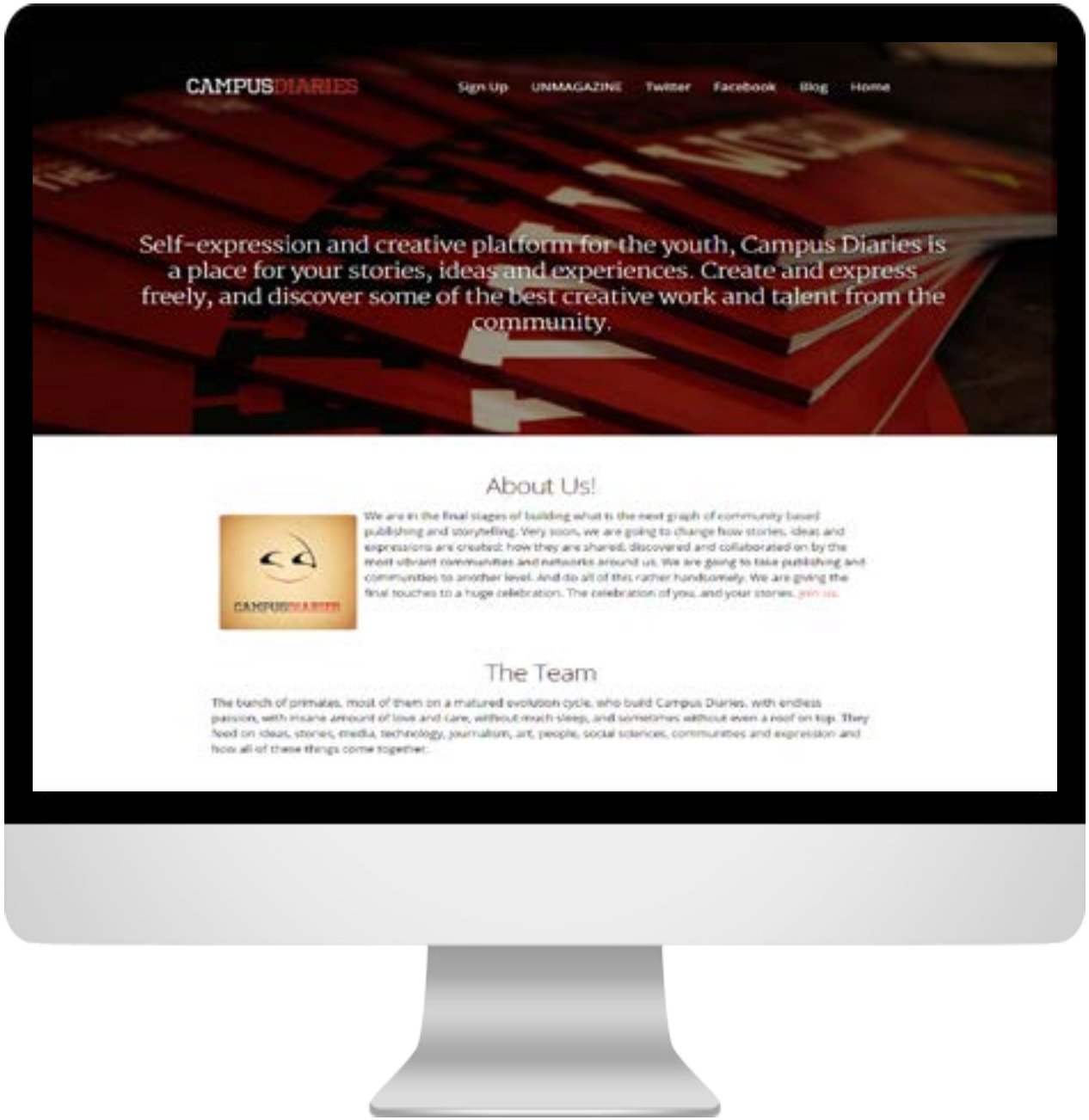
A slideshow of our application

Click on the file below to play the slideshow

Technologies Used:

Languages: Python, HTML, CSS, Javascript, bash.
Libraries: OpenCV, Matplotlib, PIL, NumPy, Flask.
Databases: Yale Database A, ORL database.
The code for the application can be found at https://github.com/AakankshaParameshwar/facerec-FYP

CAMPUS DIARIES WEB DESIGN PROJECT



I designed the 'about' page of CampusDiaries during my internship along with another intern (Abhishek R Shetty). As a beginner in web development, I learnt front-end languages HTML5, JavaScript and CSS3 and also gained an exposure to responsive design by reading various blogs and journals.

Initially we prepared rough wireframes on content presentation. We created basic web pages and built over it by adding more features as we progressed.

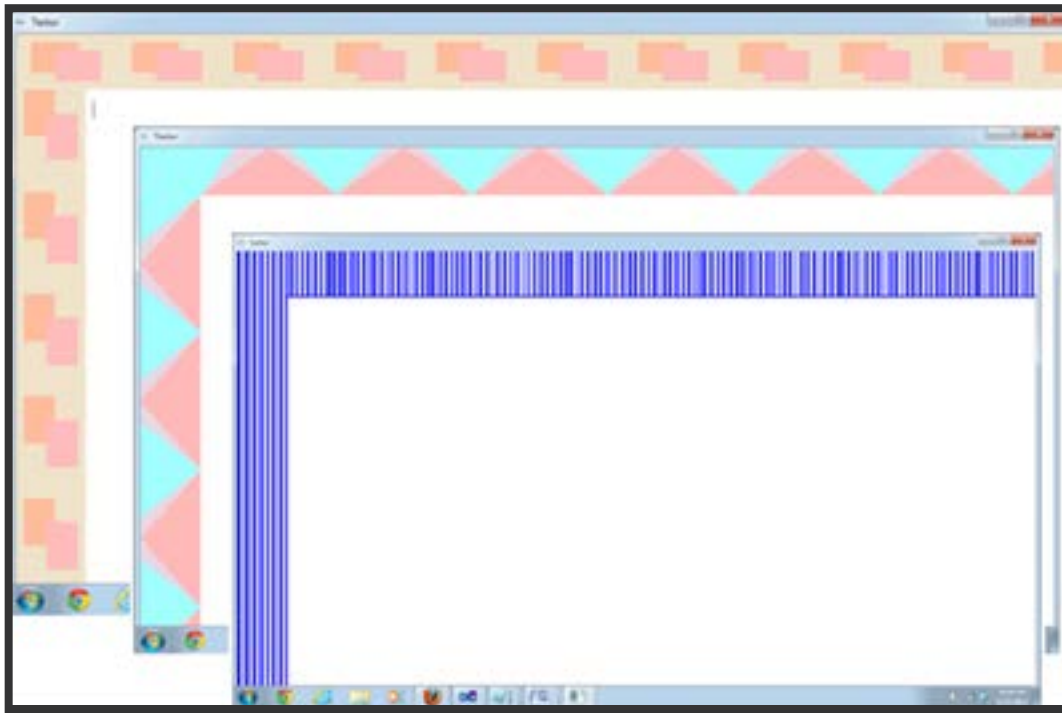
My contributions for the web page include the header image slideshow feature and the smooth transistions for viewing one staff information after another.

One of the biggest lessons I learnt during this project was that a clean UI with simple features is more beautiful and well accepted than a page with too much information and design.

The page is active at - http://www.campusdiaries.com/about

We also, developed a drupal event web page for Campus Diaries by the cancellation of the event stalled the project.

Technologies used:
Languages: HTML,5 CSS3, JavaScript.
Libraries: Masonry, JQuery



TEXTOR

I and a friend (Akshay Channabasaiah) collaborated for this Computer Graphics mini project to design and develop a full-fledged text editor. Our main intention in implementing this project was to understand how simple editors actually worked and rendered the text. The project was implemented as part of our undergraduate fifth semester Computer Graphics' course using C++ and OpenGL library.

This editor supported the following functionalities:

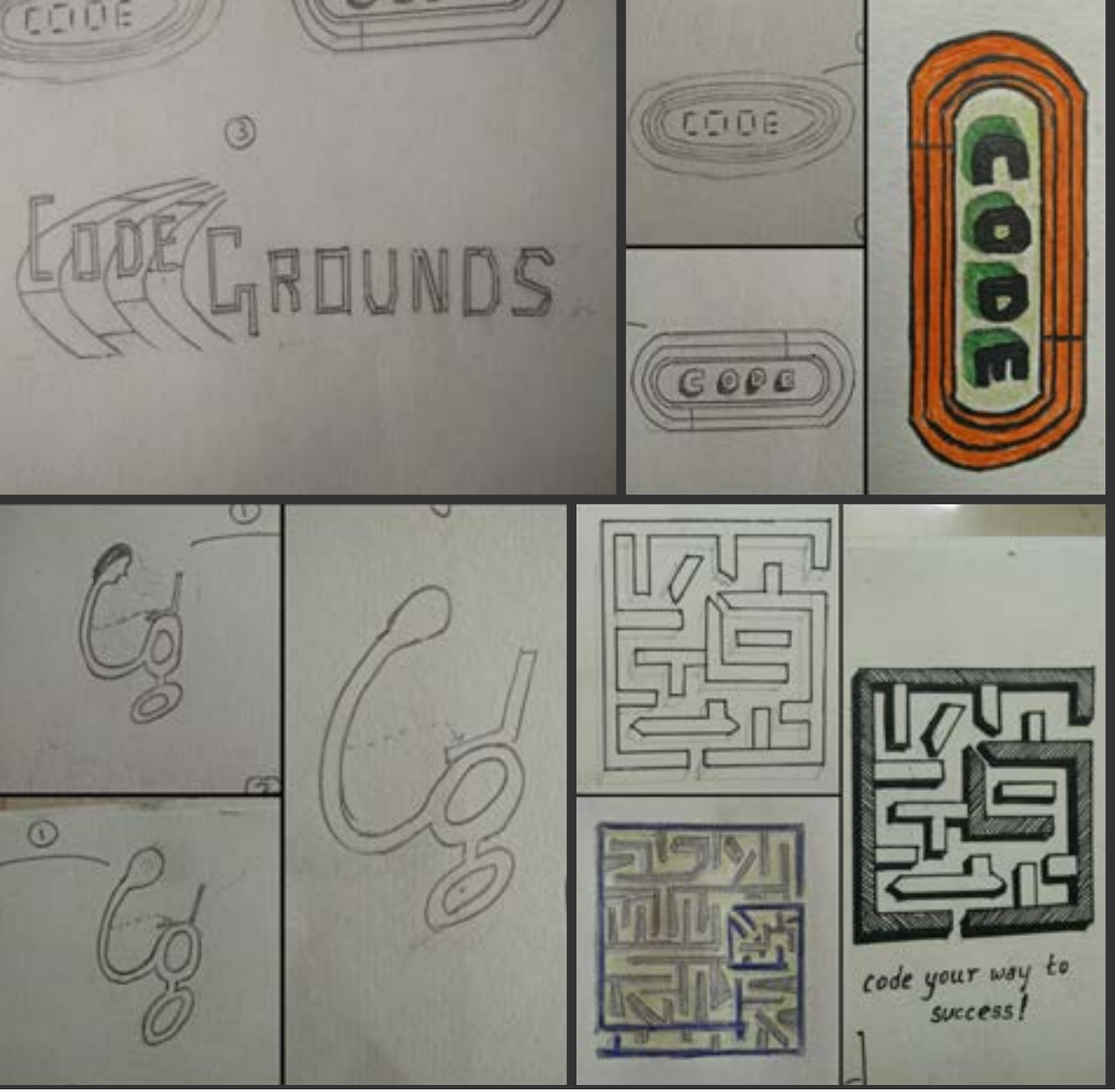
- Font change
- Font color change
- Background wallpaper change
- Cut
- Copy
- Paste
- Delete
- Undo
- Redo
- Save
- Save As
- Open documents previously created using textor

I worked on the first six functionalities while my team mate worked on the last three. For functions like 'cut' and 'paste' we had to take into account the width of a character in the fonts we supported, to make the selection of text work correctly and pasting lines of text required proper calibration to push the previous text to subsequent lines.

We used OpenGL library to display text, menu's, graphical wallpapers and to capture the user input by the position of the cursor at any given time. The logic for various functions was coded in C++.

Technoliogies Used:
C++ programming language, OpenGL library, Visual Studio software

(top-left) *Change of font color using the menu options.*
(top-right) *Various wallpaper backgrounds provided in textor to make the application more aesthetic and interactive.*



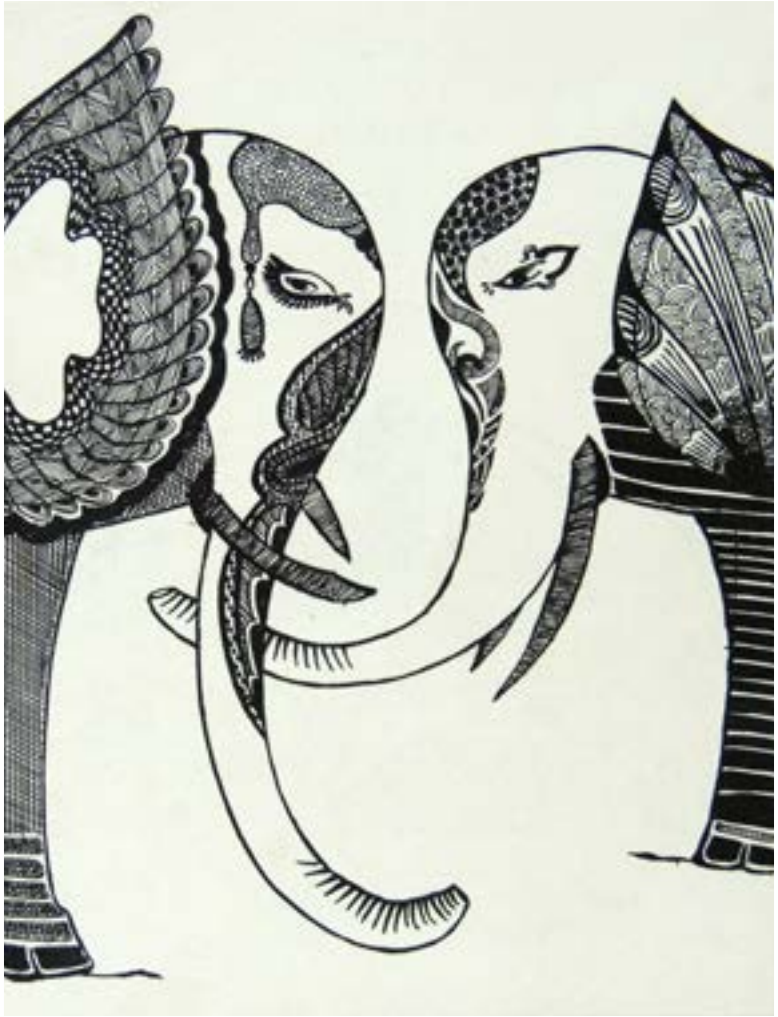
CODEGROUND LOGO/POSTER DESIGN

During my time at Abyeti, out of personal interest I designed logo's and posters for Code Ground an online web test hosting platform, formed by employees at Abyeti. While the logos are still under consideration, the posters are available at http://goo.gl/CGqHRR .

ARTWORKS

The following are some of my best art works.

The middle piece of both art work is a shape that is used in traditional Indian designs. Mehendi is a henna product used to color hair or draw designs on hand. My mother drew similar shapes on my hand during festive ocassions. The idea here was to design two analogous shapes in a totally different manner. These designs were made using gel pen and paint. The striking black piece is a stone I collected from my old sandals.



(top-left) An illustration of a flower inspired by peacock feathers using gel pen and broken bangles.
(top-right) A representation the elephants decorated during 'Mysore Dasara', a grand festival held at Mysore every year where the elephants carry the idol of goddess 'Chamundi' from the temple to the palace.
(bottom-left) An exploration of 3-D art by creating petals through stitching and colored stocking material.

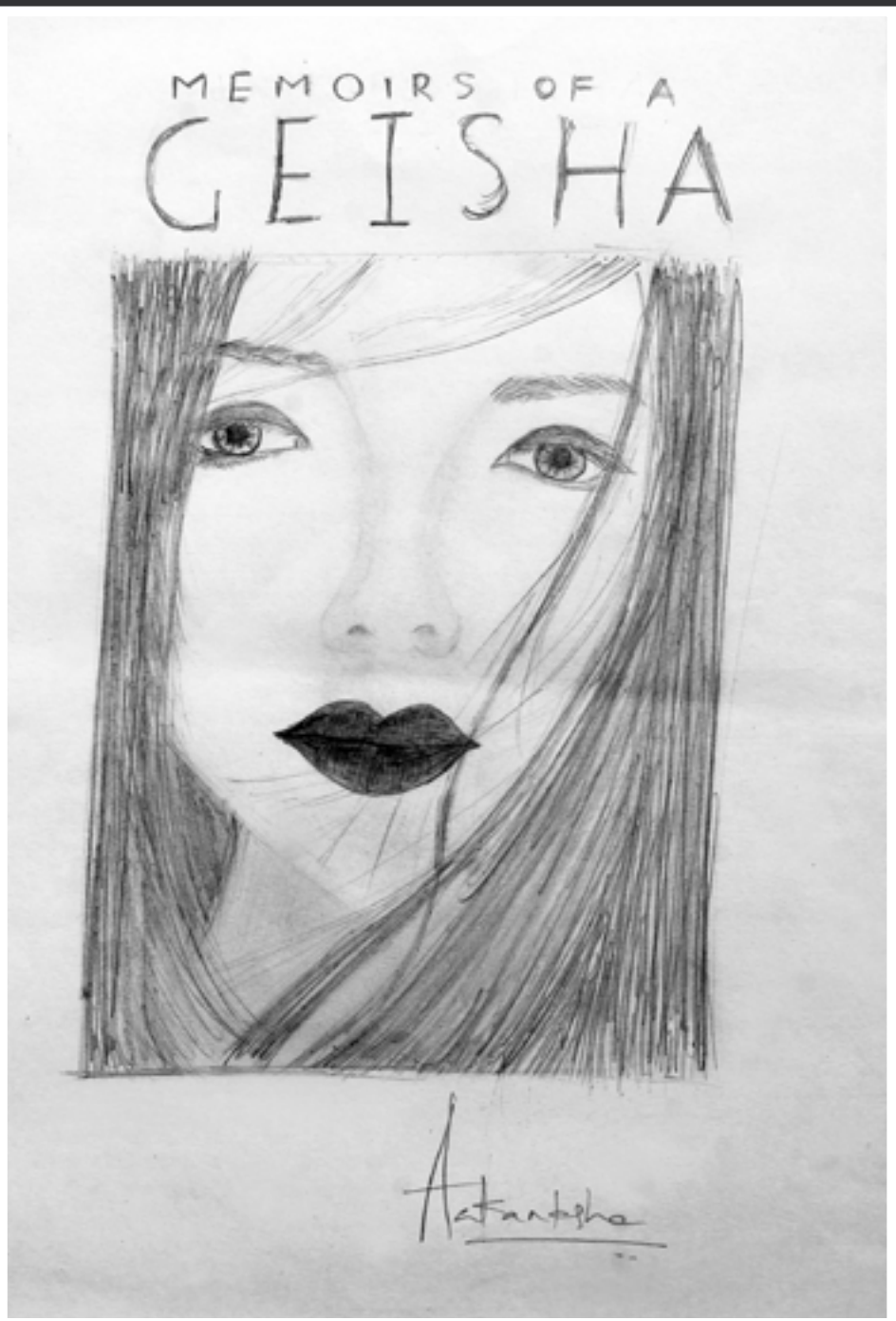
I like to reuse objects perceived as waste in my artwork be it a broken bangle, an old shoe stud, earrings or any object that can add more value to the artwork.

SKETCHES / PAINTINGS

During my free time I like to sketch and learn oil painting.

A still-life scene sketching

My version of the 'Silent Night', a painting by Marion Dutton, created while learning oil painting from her online tutorials.



My rendition of the front page of the 'Memoirs of Geisha' book by Arthur Golden.

A sketch of an Indian Hornbill