

Sketch Artist

Senior Design Spring 2021

Sydney Miller and Sanjana Rao | May 7th 2021

Sketch Artist is a program that takes in a portrait photograph and outputs a stylized drawing, resembling the work of a portrait artist.

Implemented in Python

Overview

Feature Breakdown

Pre-Processing

Salient Line Extraction

Shading

User Parameter Controls

Pre-Processing

Pre-Processing

Feature Breakdown

Gray-Scaled Images

Cropped Images

Applied Face Detection

Salient Line Extraction

Salient Line Extraction Process

Pyramid Representation

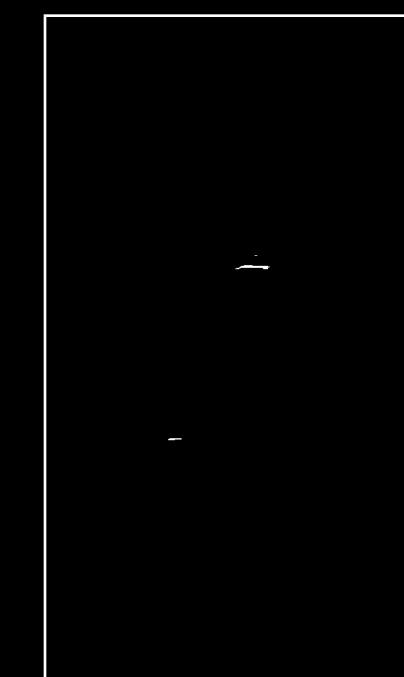
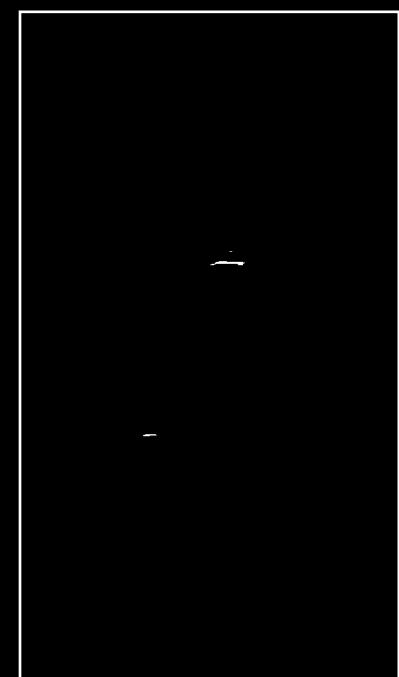
Gabor Kernel

Connected Component Extraction

Thinning

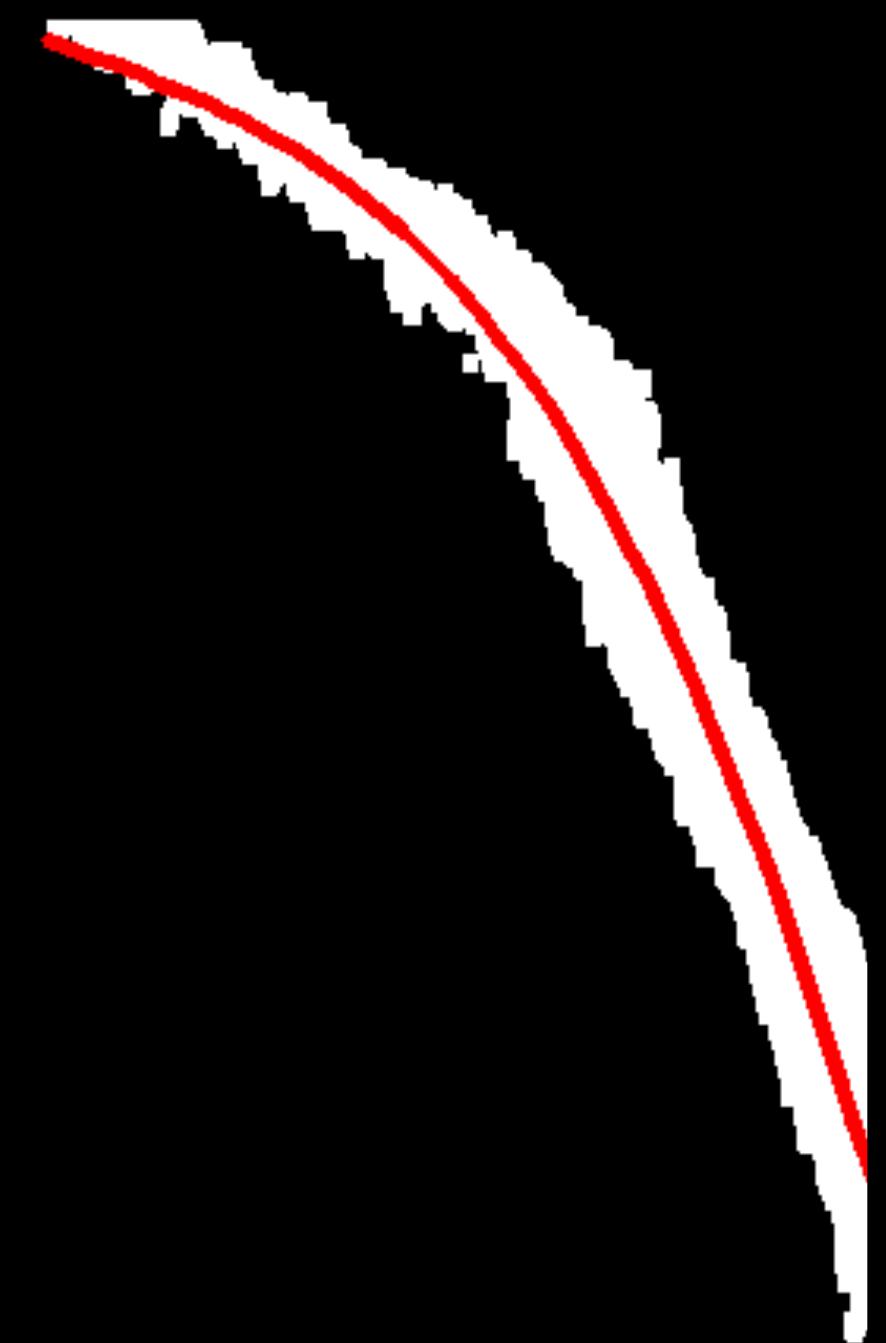
Line Extraction

Pyramid Representation



Line Extraction

Skeletonization of Connected Components



Line Extraction

Final Output



Shading

Shading Process

Histogram-Based Thresholding

Connected Component Extraction

Creating Point Set

Connected Points into Oriented Splines

Perturbing Points

Shading

Histogram-Based Thresholding



0-83



84-223



223-255



0-28



28-77



77-255

Shading Generating Point Sets



Iterative Point Selection



Criterion

Distance Range

Minimum and Maximum Distance Set Based on Area

Orientation

Oriented Along the Contours of Facial Features

Shading Orientation



Random Orientation



Some Orientation



All Orientation

User Parameter Control

User Parameter Controls

Breakdown

Number of Lines

Line Length

Curve Amplitude

Curviness

Number of Oriented Lines

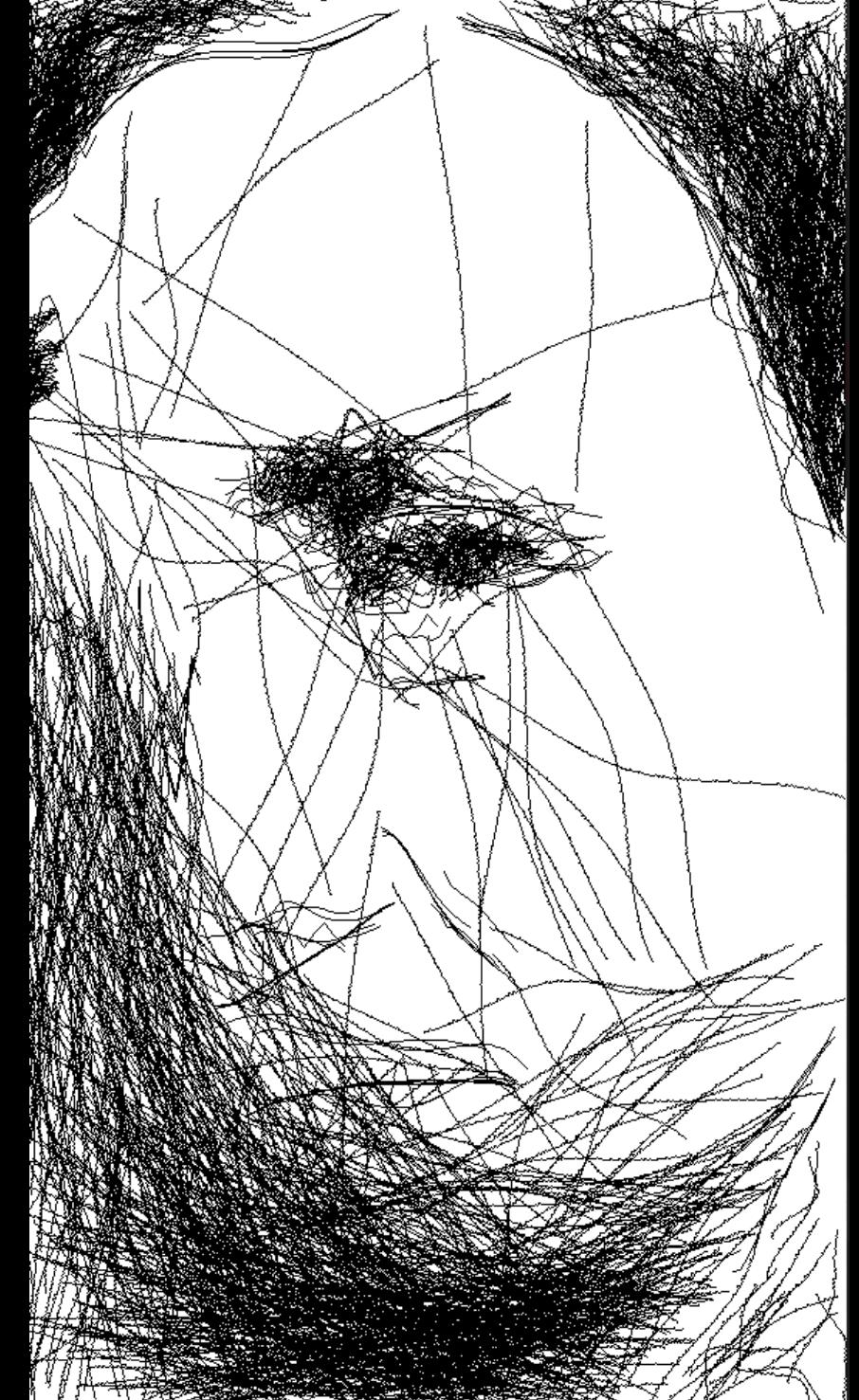
User Parameter Controls

Number of Lines



User Parameter Controls

Line Length



User Parameter Controls

Curve Amplitude



User Parameter Controls

Curviness



Final Results

Final Results

Comparisons



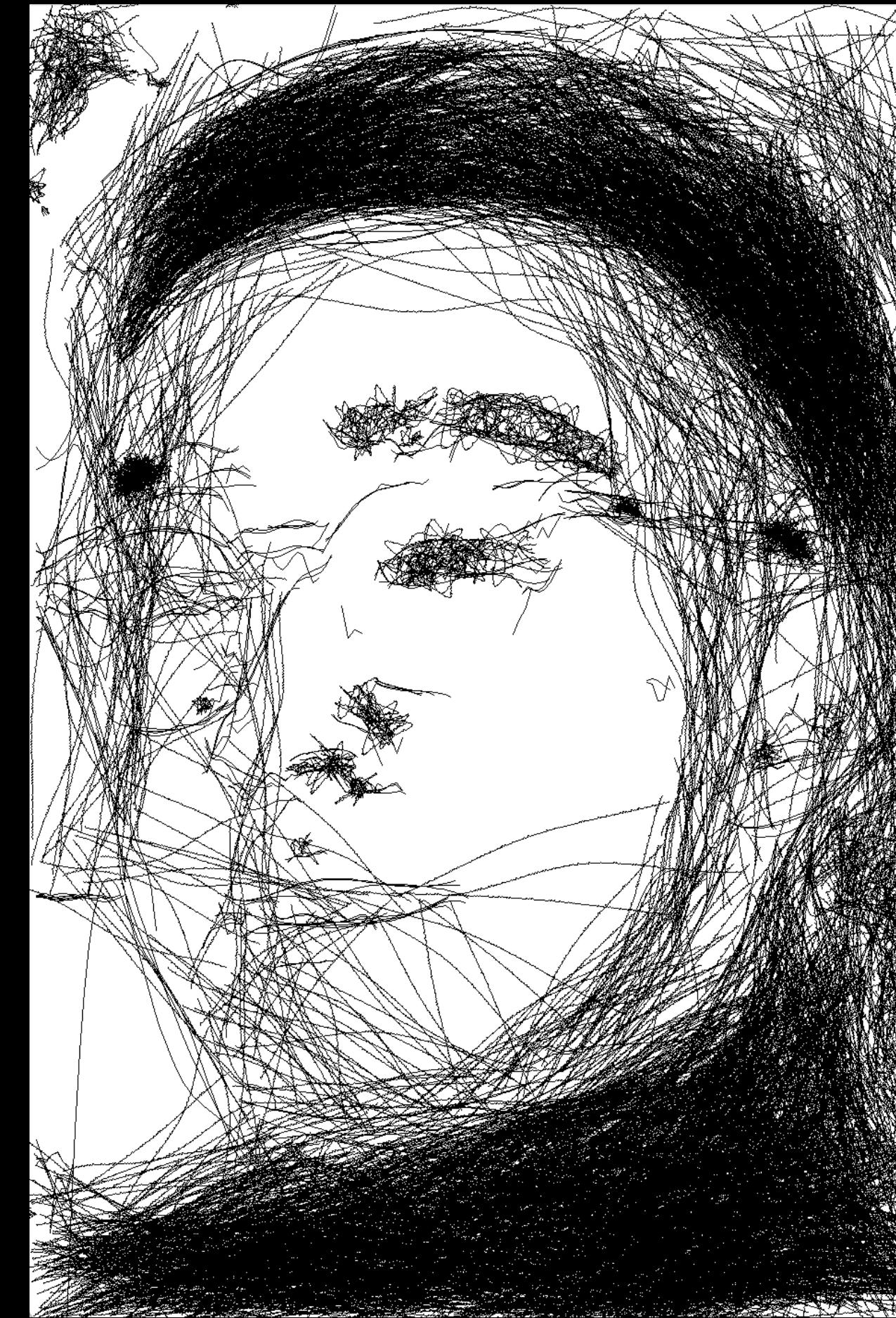
Final Results

Comparisons



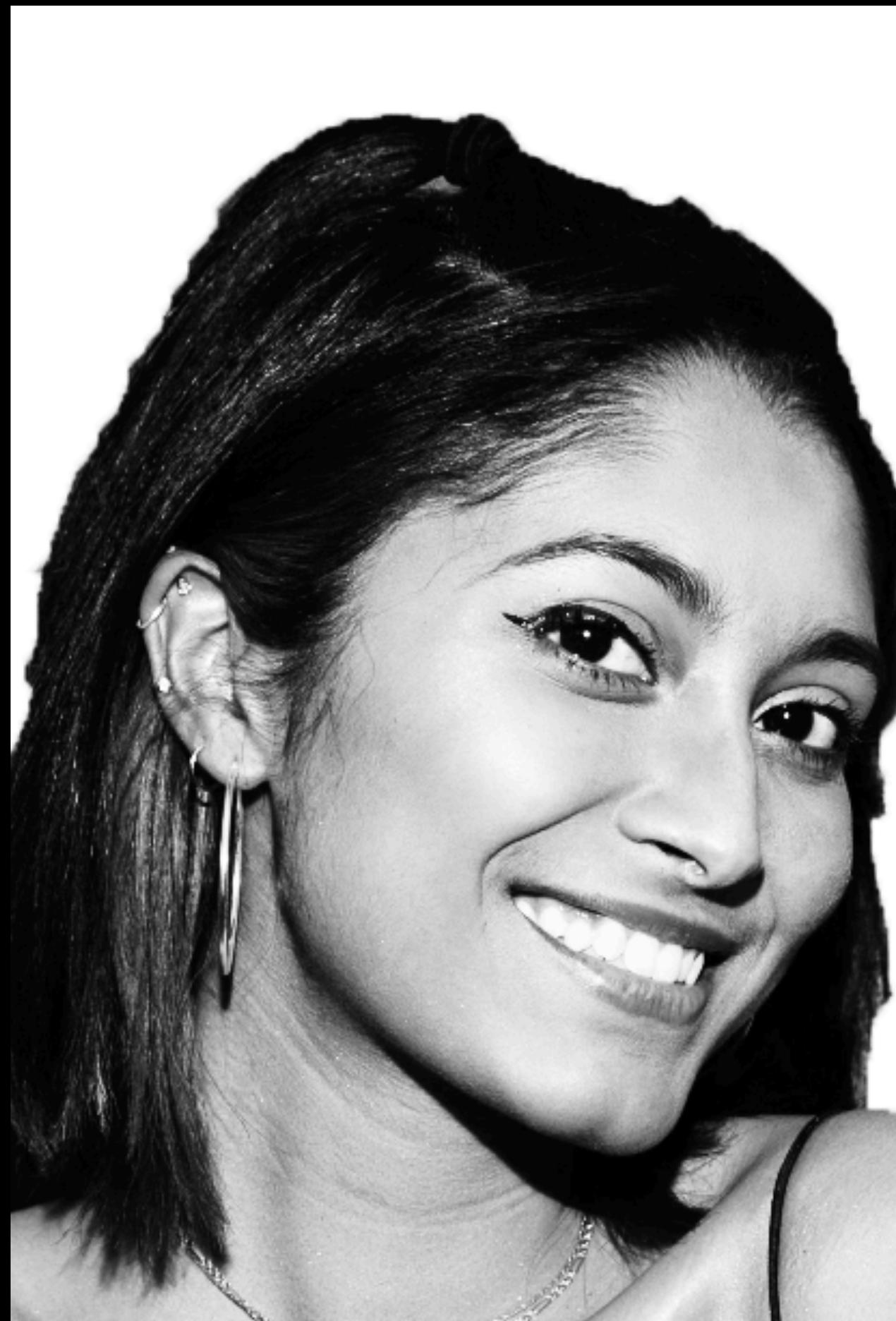
Final Results

Comparisons



Final Results

Comparisons



Thank You