De Florez Competition

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Mech-A-Sketch
Automated Etch-A-Sketch

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Figure 1: Example finished sketch of Starry Night [1]

Overview

The goal of this project is to **automate the generation of Etch-a-Sketch drawings from a text prompt**.

- Text input provided as input into DALLE 3 model to generate the baseline image
- Pathfinding algorithm generates a coordinate path of one continuous line tracing the image
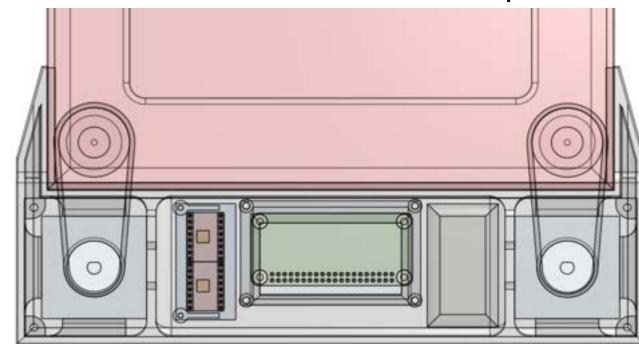- Motors turn the knobs to draw the picture

Figure 2: Back view of the Mech-a-Sketch design showing motors, electronics, and the case layout
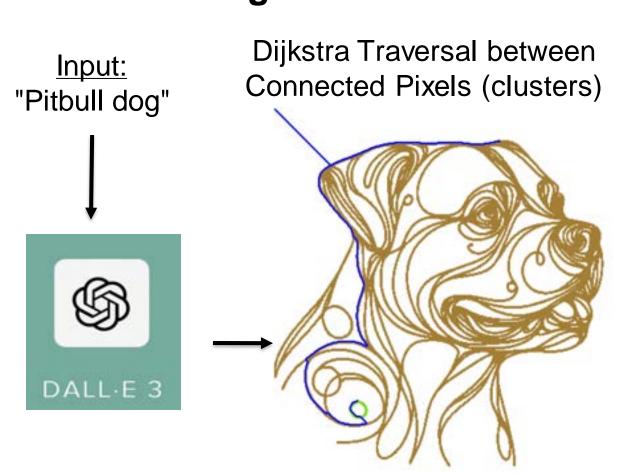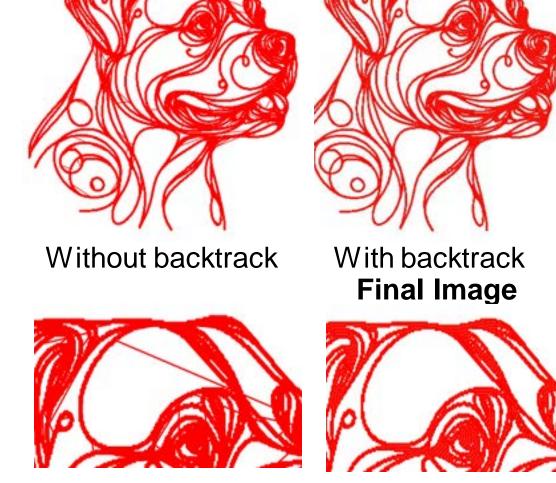
Electromechanical Design

Notable Components:

Pi Zero W   Stepper Motor   3D Printed TPU Belt

Software Design

Input:
"Pitbull dog"

DALL·E 3

Dijkstra Traversal between Connected Pixels (clusters)

Without backtrack

With backtrack
Final Image

Depth-First Search traces each cluster

[1] drawn by Jane Labowitch