

Light Painting

Course: CSCI 1290 Computational Photography and Image Manipulation

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Abstract

Our Light Painting project allows users to paint light trails on a camera feed or a given video stream using their hands and different tracking methods. Our inspiration was the light trail photographs captured by Stephen Orlando. We implemented a light painting design that follows the path of a subject and generates a light trail of its movement across frames.

For my capstone project, I have implemented green tracking, motion tracking using background subtraction and hand tracking using the YOLO model for this project. For tracking hands, I used a pretrained YOLO model on “hand” labels and used the centers of the bounding boxes as the detection points. The motion tracking is based on using multiple masks to remove the noise in the scene and isolate the foreground using a cv2 MOG2 background subtractor. Green tracking assumes that a green object is present in the scene and uses a mask to mask to find the contours of the object. Similarly, the centers of the green tracking and motion detections were used to create the light trails.

The second design challenge was implementing multiple point tracking, which refers to tracking 2+ hands, green points or moving objects. I have implemented the algorithm for grouping the detected points into two groups based on the difference to the previous detected points.

Our final presentation for visuals and details [can be found here](#).