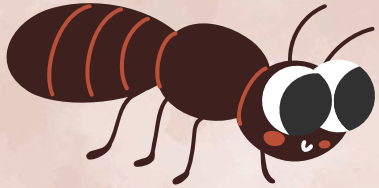


Progress with OpenCV and Ant Detection 2023

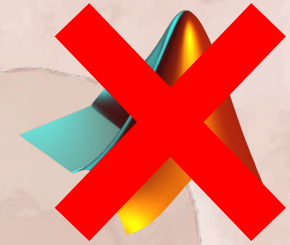
Hayley Walters

Goal

Want to understand what influences individual ant movement choices as they explore artificial trees, and how do these choices lead to collective decisions about where to nest within the structure.

The Experiment

Our Pipeline



1. Trim the first couple seconds off, since the camera moves a bit at the start
2. Split the video into 10 minute intervals
3. Detect regions of interest (ROIs) and crop / create individual videos for every ROI
4. Track the turns that every ant makes through every ROI

Current Detection Steps

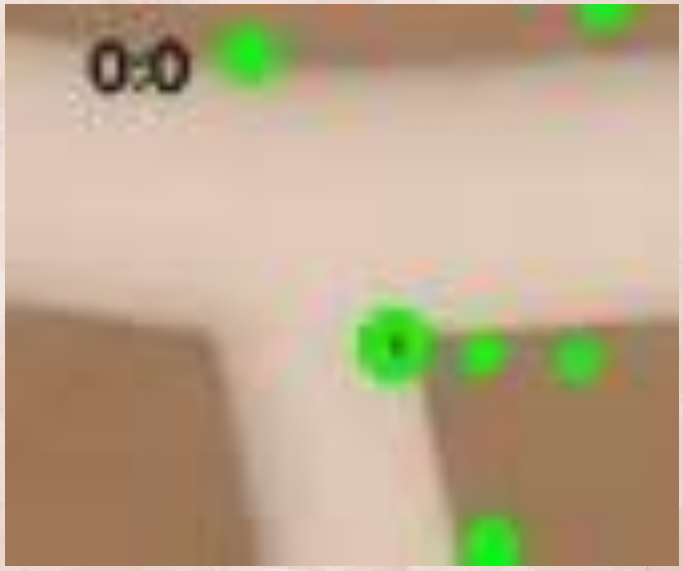
1. Grayscales the frame
2. Thresholds
3. Edge Detection

The Problem

Video noise is being tracked as ants

The Problem

Video noise is being detected as ants



Attempt 1
Increase the threshold darkness value

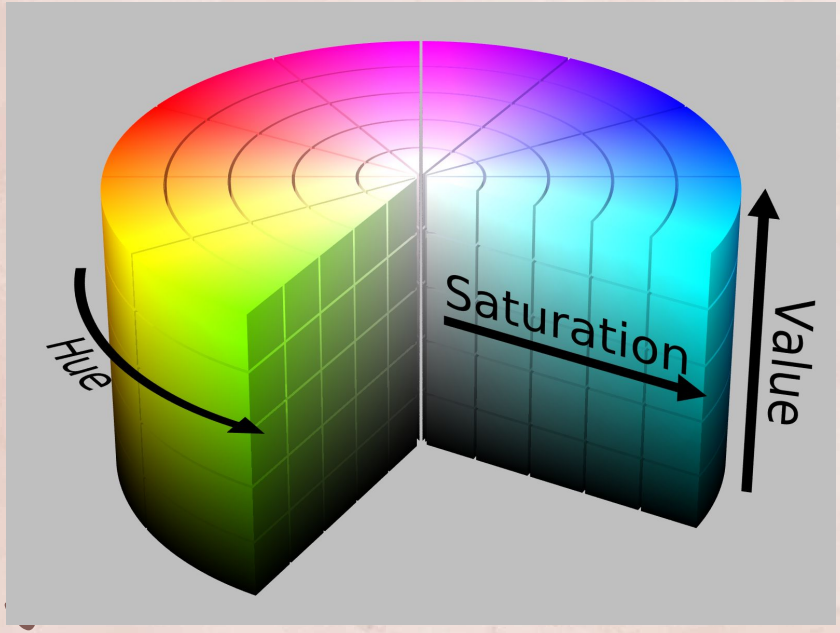
Attempt 2
Gaussian blur

Combines/merges pixels with other pixels nearby *(convolving the image)* according to a function called the Gaussian function *(normal distribution in statistics)* creating a blurring effect. Generally smooths over image noise.

Attempt 2
Gaussian blur

Frames so low resolution, can't apply blur more than *t = 2.* Ants are usually 5 pixels in length, too large for this scale of blur.

Attempt 3
HSV Colorspace



“it only uses one channel (hue) to specify color, making it very easy to find objects that are a certain color, despite lighting variations”

– “Painting a picture of color spaces” Bee lab blog post

Attempt 3
HSV Colorspace

Attempt 3
HSV Colorspace

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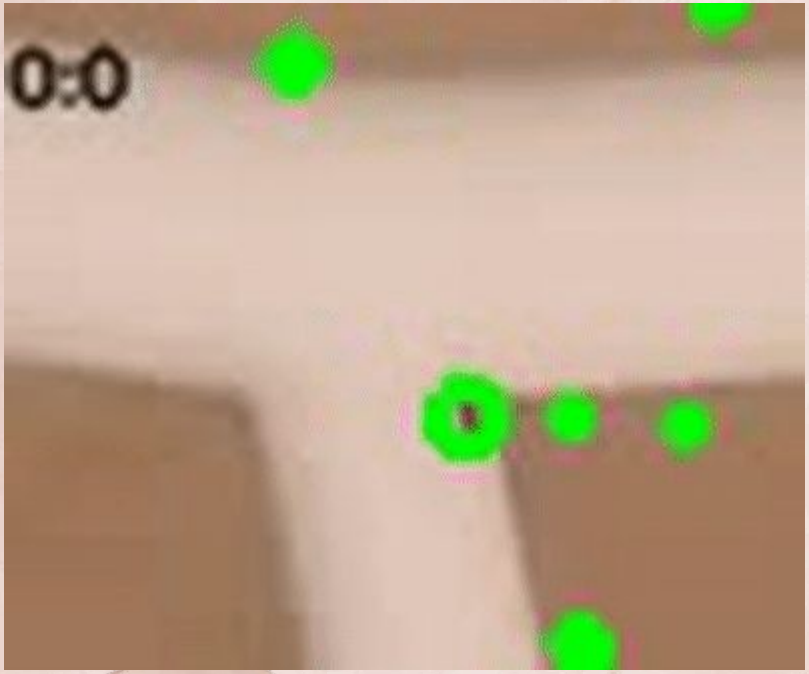
Attempt 3
HSV Colorspace


0:0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