CSci 343 Fundamentals of Data Science
Challenge 4

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Analysis

After capturing our images, running our algorithm and saving with thresholds from [0.1...0.5] the following conclusions were achieved. The discussion take place below each of the hypothesis points previously stated to validated their veracity.

Hypothesis

1. *The amount of movement in the leaves of the trees will depend on the wind during a certain period of time.*

This statement hold true during our experiment, the window when the pictures were captured (Oct 10, 10:50am - 11:50am) presented an windy day. From the difference between the 10% threshold and the 20% threshold we can observe that not only the tree leaves presented movement, rather the whole tree including the tree branches.

2. The pathways will present movement, however this movement might be minimal due to the temporality of the pedestrian movement.

Not entirely correct, in fact the pathways a great amount of movement. This movement, however, comes from an unexpected source that was not accounted during the hypothesis formulation: shade. The positioning of the camera with respect to the sun, and how the timeframe of capture will affect the shade present in the picture was not considered. In the images we can see clearly how much are the shade stop covering in over an hour of exposure before noon.

3. No static human presence will be detected due to the lack of resting areas and time in between captures.

It was previously stated that due to the time difference in between screen grabs and the observed human behavior, just briefly appearing to transition from point a to point b, the human presence was going to be minimal. In our analysis, the conclusion is that the human presence in the difference images is almost non-existent. If you open and scroll to all the pictures, there is always at least one human per picture, however the variance in their positioning is so distributed among different point in the picture that their presence becomes in-existent when being averaged against the normal ones.

Conclusion

In overall the hypothesis obtained during our observation period, in addition to the predicted behavior based on the observations were correctly stated. One big element that created a big unexpected result, like shade in this particular scenario has taught me to take a moment and think about all the possible edge cases scenarios and how all the things that might seem minimal con have a big impact on your final result.