

# **Computational Photography**

## **Assignment #11**

### **Video Textures**

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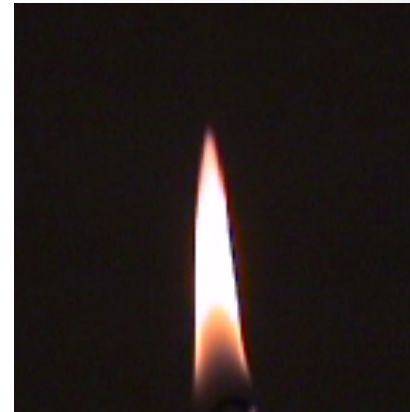
# Best Results from Sample Input



Start Frame

out: frame0000.png  
orig: candle 040.png  
idx: 39

Alpha = 0.015

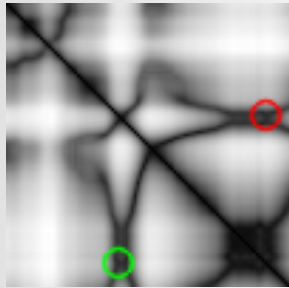


End Frame

out: frame0052.png  
orig: candle 092.png  
idx: 91

- Link to your candle video texture gif: <http://i.imgur.com/ZISnGUQ.gif>

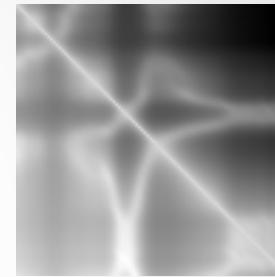
## Results from Sample Input



Diff 1  
computeSimilarityMetric



Diff 2  
transitionDifference



Diff 3  
findBiggestLoop

- Can you identify your start and end frames on these matrices? Discuss.

Yes, the dark regions in diff 1 and 2 represent pairs of frames with the least differences between them. The start and end frames will be two points on the image that, depending on the alpha value, is the farthest from the diagonal and is relatively dark.

# Results from Sample Input

- Did you get a good result? Explain.
- The gif loops reasonably well, except for the small jump in the height of the flame. This cannot be helped much unless we employ some warping or wait long enough such the flame any two points of the video has the exact same characteristics.
- What worked well?
  - The looping
- What was difficult?
  - Manually trying different alpha values - but this is not a difficulty exclusive to this texture.

# Best Results from Your Own Input



Start Frame

out: frame0000.png  
orig: frame 003.png  
idx: 2

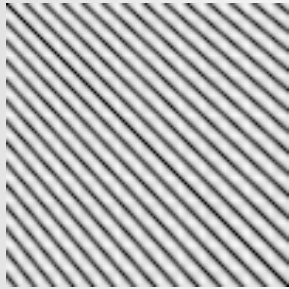


End Frame

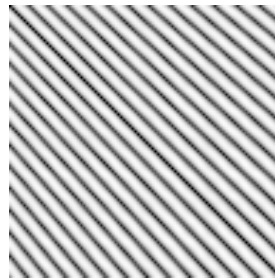
out: frame0088.png  
orig: frame 091.png  
idx: 90

- Where is this from (describe)?
  - This is a gif of the my stand-fan slowing down after it was switched off
- Link to your video texture gif:
  - <http://i.imgur.com/VCBSg74.gifv>
- Link to either the frames (folder) or the video clip you started with:
  - [https://dl.dropboxusercontent.com/u/14887563/MVI\\_1450.MOV](https://dl.dropboxusercontent.com/u/14887563/MVI_1450.MOV)
- Show your start and end frames, identify their filenames, and code index numbers above.

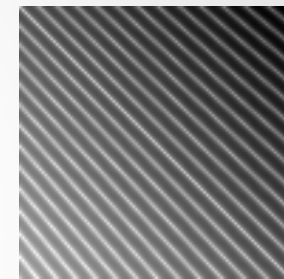
# Results from Your Own Input



Diff 1  
computeSimilarityMetric



Diff 2  
transitionDifference



Diff 3  
findBiggestLoop

The difference matrices are very regular - this is expected from a spinning fan. Since the fan was slowing down, you would see the space between a pair of dark lines increase as you move away from the diagonal (but not perceptible from these pictures).

# Results from Your Own Input

- Did you get a good result on your own video?
- I think I did get a decent result and this fared much better than my water drop creating a ripple loop. A steady cam and a featureless and motionless background helped a lot with getting a good result.
- How was this video different from working on the sample frames?
- Choosing a good subject and scene and capturing a good video from it was, in my opinion, was half of the work necessary and so working on my own texture needed quite a bit more effort than the sample frames.
- What was difficult?
- Capturing the individual blades of the fan spinning proved to be difficult due to my camera's inability to capture it fast enough. So I had to capture them winding down and this shows in the gif where the blades momentarily speed up at the start of the loop.

## Finding Alpha

- For one of your video textures, investigate alpha. What values did you try, what results did you get? Add rows, pages as needed.
- Identify the video texture:

Alpha	Start / End frames	Discussion
0.015	39, 91	With any higher alpha, frames 2-97 were chosen which has a much larger jitter in my opinion
0.005	2, 90	With any smaller alpha, only the frame 2 was chosen. However, even with a very large alpha, frames 2-90 were chosen.



## Finding Alpha, cont'd

- What are the effects of the alpha values, as seen on the difference matrices?
- Higher the alpha value, longer the loops and possibly jumpier loops. Smaller the alpha value, shorter the loops are and the actual transition difference is given greater weight.
- How did you identify good alpha values for this video? Other than by watching the gif, how can you tell?
- Looking at the transition difference pictures, you ideally want a sufficiently dark region that's the farthest from the main diagonal - this lends to better and longer loops. Going by this, you can estimate the alpha value required.
- Was the best alpha for your video the same as the one for the sample video? Discuss.
- More or less, I chose to show 0.005 as the alpha value for my texture since that was the lower limit, below which only one frame was chosen.