Team:
Research >> Intern

Members:

- Vaibhav Garg (20171005)
- Anchit Gupta (20171041)
- Neel Trivedi (20171015)

Topic: Seeing Arrow of Time

Basic Understanding

- The goal of this paper is to analyze the given video and determine whether the video is being played in forward or backward direction.
- This paper aims to learn the temporal relationship between subsequent frames of the given video.
- Spatial relations among frames is a very much studied area but there is not so much work done to understand the temporality among the frames.

Some Applications:

- Estimating Optical Flows in videos
- Video denoising
- Video decompression
- Filling the missing Frames
- Predicting what will happen next in incomplete video
  - A very much essential task in robotics
- And many more....

Dataset

- The authors have used a data set of YouTube videos containing **180 videos** which was obtained manually using more than **50 keywords**.
- There is also a train/test/validation split specified in the paper with **70 clips for training, 60 clips for testing and 50 clips for validation**
- All the videos are **6-10 seconds** long
- All videos are **HD** without any compression
- Among 180 clips, **155 are forward and 25 are backward** videos.
- There is also a **Tennis-ball Dataset** which contains **13 HD** videos of tennis balls being rolled along a floor and colliding with other rolling or static balls.

Approach

- The paper proposes **3** different methods and a baseline procedure to accomplish the task of finding the ‘Arrow of time’ in the given video.

1. SVM trained on SOE (Spatial - temporal Oriented Energy) *(baseline)*
2. Flow - words based method
3. Motion - Causation method
4. AR (Auto - Regression) method

Timeline

- Week 1 (15/02 - 21/02)
  - Read the paper thoroughly
  - Go through the reference papers and other related works
- Week 2 (22/02 - 28/02)
  - Collect the data sets
  - Analyze the dataset and find if some more related datasets have become available
  - Start working on the first flow-words based method

- Week 3 (29/02 - 06/03)
  - Complete the first method implementation
  - Mid Evaluation
- Week 4 (07/03 - 13/03)
  - Start working on Motion - Causation method
- Week 5 (14/03 - 20/03)
  - Finalize second method
  - Start working on AR method
- Week 6 (21/03 - 27/03)
  - Finalize all the method and analyze the results
  - Try to implement some real world small application
- Week 7 (28/03 - 01/04)
  - Final Evaluation

Okay... That's it.
Thank You.