

Project Proposal

We choose to tackle Project 1, analyzing news broadcast. There are 4 main tasks that needs to be solved

1. Detecting different shots in the broadcast

Detecting different shots in a broadcast is the most challenging task of this project. Many factors in a news broadcast would cause false positive in a naïve shot detector such as high frame rate footage, persistent elements on the screen (news logos, bottom ticker, etc.), and semantic things we would classify as a different shot (such as a newscaster shifting between cameras in the studio to between stories) that would be difficult to detect in code.

We will begin by testing RANSAC and SIFT on shot detection, and manually tweet boundaries on some training footages. If that implementation does not prove viable, we will attempt other strategies such as a neural network or auto coders to solve shot boundaries.

2. Detect broadcaster logo

We anticipate detecting broadcaster logo to be the easier of all these tasks. Since the location, size, and appearance of the logo are invariant factors we simply need to detect whether the logo is there or not. By training a neural network with all the major broadcaster's logos, and the locations they may appear in, we do not expect this task to be a challenge.

3. Detect faces

Facial detection is already a well explored area in computer vision, however the challenge here would be to detect the faces in a very short time so that all the frame of the videos can be processed within a reasonable time.

We will attempt to use a neural network to detect faces, and train it to differentiate between male and female faces to begin with. However, we would also explore other face detection methods such as the Viola-Jones face detector.

4. Visual the detections

After all the detection work is done, we need to produce a resultant video of all these detections overlaid on the original video.