

Syracuse University  
Department of Electrical Engineering and Computer Science

CSE 400/691 Image and Video Processing  
Spring 2018

Assignment V

**1) Background Subtraction (75%)**

Implement the background subtraction algorithm described by K. Kim, T. H. Chalidabhongse, D. Harwood and L. Davis in the paper titled “Background modeling and subtraction by codebook construction”. Test your code on the video sequence provided. You should:

- a) [35%] construct the codebooks from  $N$  frames,
- b) [15%] refine the codebooks by employing the maximum negative run-length,
- c) [15%] apply foreground detection to get the foreground pixels,
- d) [10%] save and show 5 example frames where there are multiple detected foreground objects.

**2) Morphological Operations (25%)**

- a) Apply morphological operations to remove noisy foreground pixels, and to fill possible holes.
- b) State which operations you chose and why you chose them.
- c) For the same 5 frames you used above, show the output of the morphological operations.