COMP9517 Week 05 Tutorial

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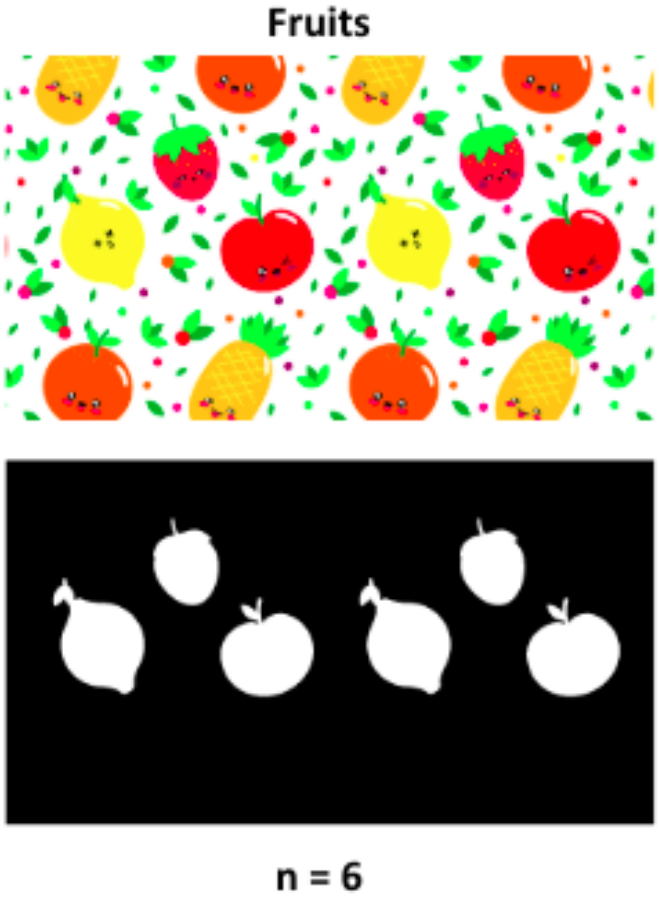
https://github.com/hharryyf/COMP9517-24T2-tutoring
https://github.com/bhaswara/CVLab/

Outline

- Image Segmentation Task
- Intensity thresholding
- Binary morphology
- Demo

Image Segmentation Task

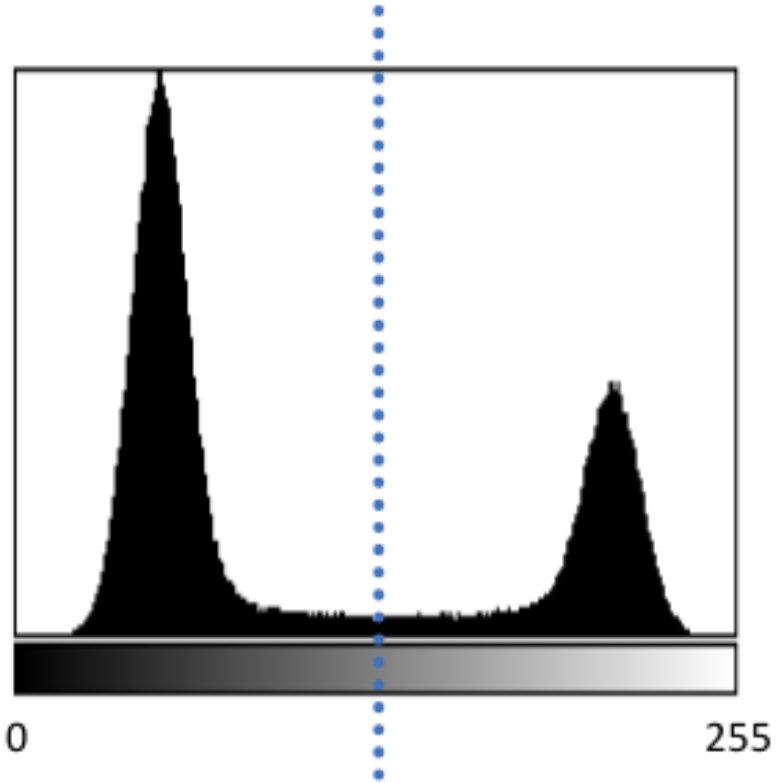
- Partition the image into meaningful regions



- Methods: **Thresholding**, mean shift, watershed

Intensity Thresholding

- Pick a threshold T, set all pixels below T to be 0, and all the remaining pixels to be 255



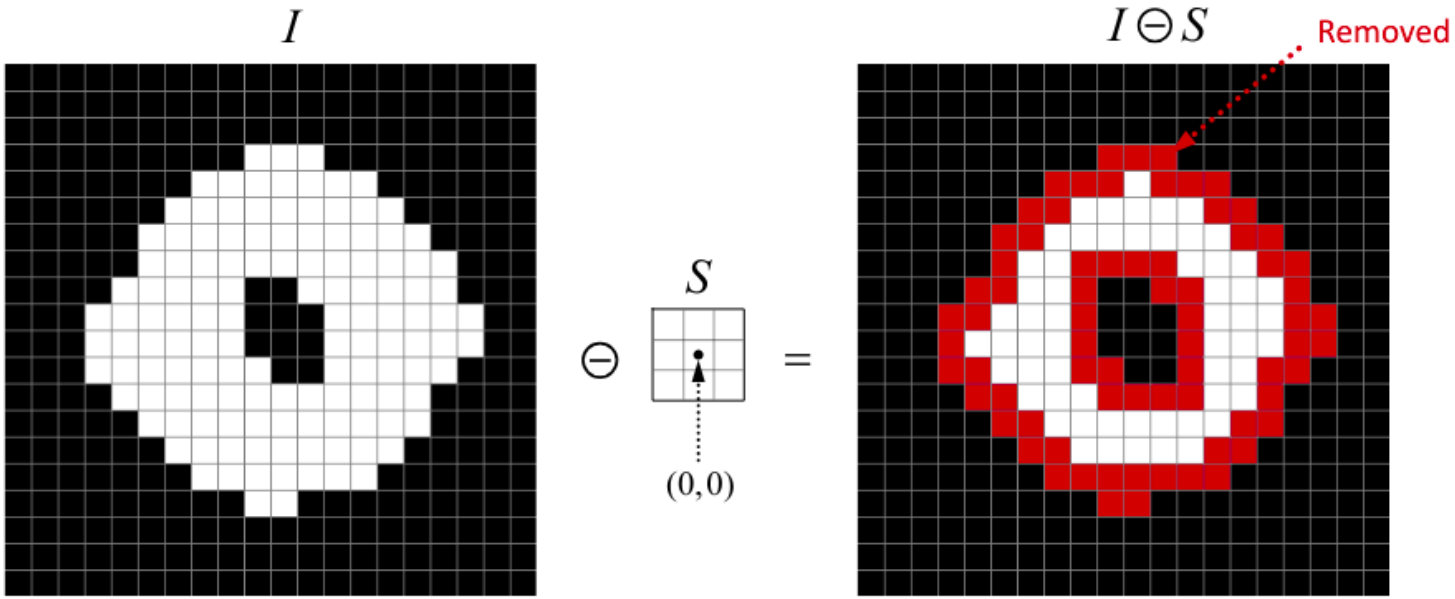
- Works well when the intensity distribution is well separated

Binary morphology

- Applied to binary images
- Reduce noise in the segmented images
- Two basic operations:
  - Erosion
  - Dilation

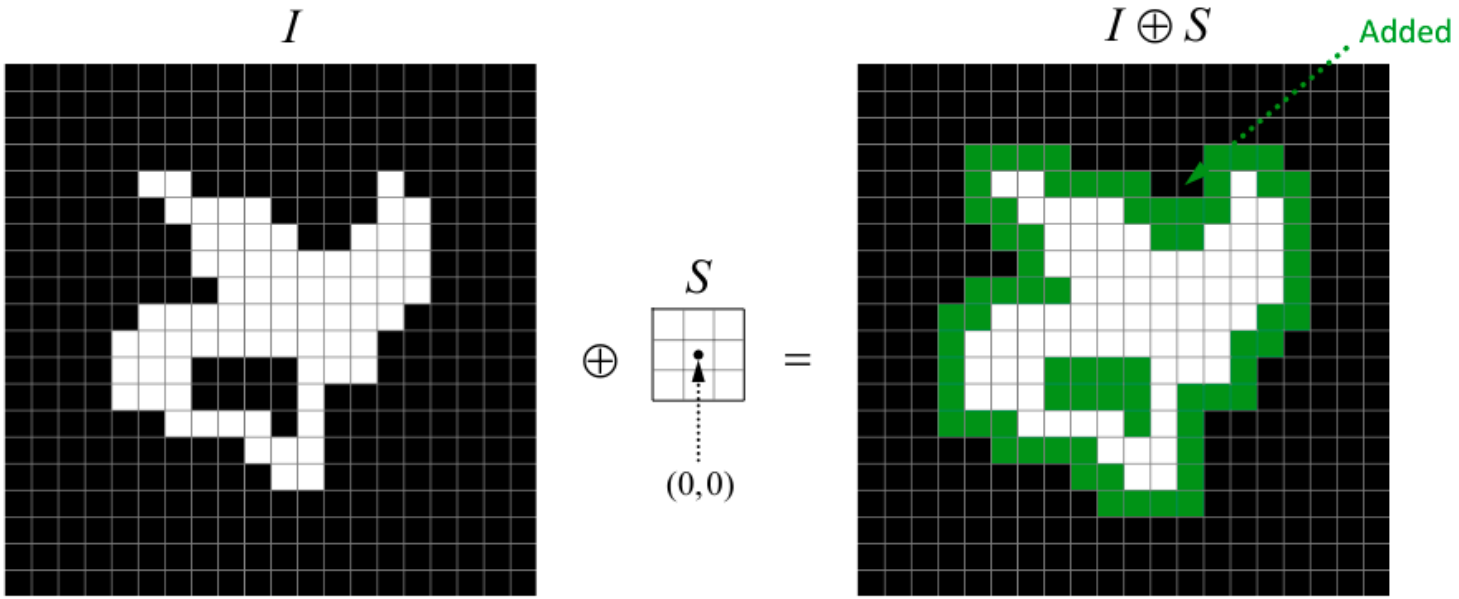
Binary morphology (Cont.)

- Pick a structuring element (e.g., a 3x3 kernel)
- Erosion: only keep the white pixels such that the structuring element is completely contained in the image



Binary morphology (Cont.)

- Pick a structuring element (e.g., a 3x3 kernel)
- Dilation: opposite of Erosion, the intersection of the image with the reflected version of a structuring element is not empty



Binary morphology (Cont.)

- Opening operation: erosion followed by dilation (eliminate smaller details in the image)
- Closing operation: dilation followed by erosion (eliminate the holes in the image)

Demo