VISION MODULES

Low level (image -> image)

→ remove noise, sharpen, enhance an image

Mid level (image -> attributes)

→ **segment**ing image into regions, objects, edges, lines

→ describing image concisely

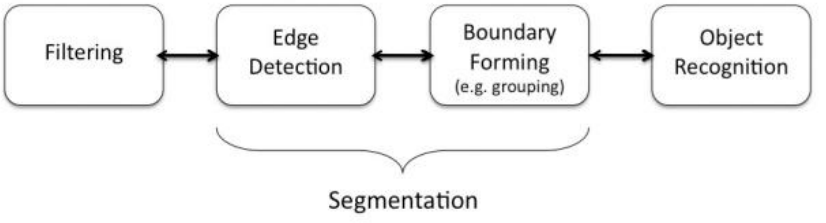
→ grouping pixels or boundary fragments

High level

→ smaking sense on an image, **understanding**

→ computer vision

INFORMATION FLOW



An image is: 2D distribution of intensity or color

• To process images, must:

– obtain images—capture the scenes via hardware

– represent images—encode them numerically

Image Formation (Alma) 3D World → 2D Image Space

• Discretization

- in image space - **sampling**

- In image brightness – **quantization**

Image Filtering

• Filtering out the irrelevant information

• Image denoising, image sharpening, image smoothing,image deblurring, etc.

• Edge detection: sudden changes in the intensity

Image Smoothing

• Gaussian Filtering / linear diffusion

– the most widely used method

Image Segmentation

• Partition an image into meaningful regions that correspond to objects exist in the image