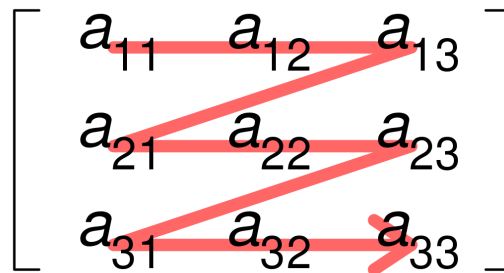


Assignment I

Digital Image Processing Functions: Reading and Point Operation

- **Requirements:** The requirements of each assignment of this course at least include a) full document in PDF/Word format with implementation details and difficulties you met, 2) source code and the compiled file (in exe/dmg/sh) and its readme to indicate how to launch it, and 3) key comments in your source code. If your code was referred from an existing source on the Internet, please cite it accordingly.
- **Problem set:**
 - a. Image reading: Give three raw-formatted images and 3 jpg images, please read the content correctly and display them on the screen, where the raw images are sized 512x512 in grayscale format. The pixel order is row-major as follows:

Row-major order



Also, please draw the centered 10x10 pixel values in each image in your report.

- b. Image enhancement toolkit: Give test six images, please implement log-transform, gamma-transform, and image negative, and compare them in your report.
- c. Image downsampling and upsampling: please implement bilinear and nearest-neighbor interpolation methods. Please compare the
 - i. original image (512x512) -> (128x128)
 - ii. original image (512x512) -> (32x32)
 - iii. original image (32x32) -> (512x512)
 - iv. original image (512x512) -> (1024x512)
 - v. original image (128x128) -> (256x512)in your report.

References:

Bilinear interpolation: https://en.wikipedia.org/wiki/Bilinear_interpolation

Nearest neighbor interpolation: https://en.wikipedia.org/wiki/Nearest-neighbor_interpolation