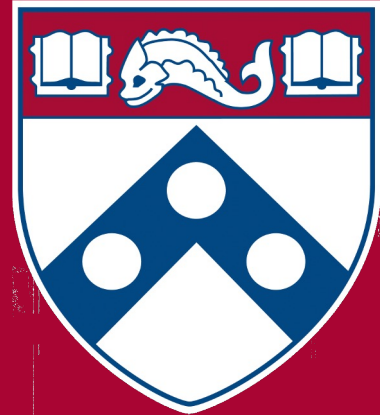


2D Arrays & Images



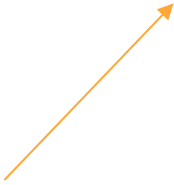
Introduction

- Images are 2D arrays of Pixels
- Pixels are integers values between 0 and 255

Loading an Image into a 2D array

- `int[][] img = ImageData.load('myImage.jpeg');`

*2D array of ints
representation of an
image*



*Library for reading
an image into a 2D
array of ints*




Image file



Display and Image

- `ImageData.show(blackAndWhiteImg);`

*2D array of ints
representation of an
image*




Image Manipulations

Black and White

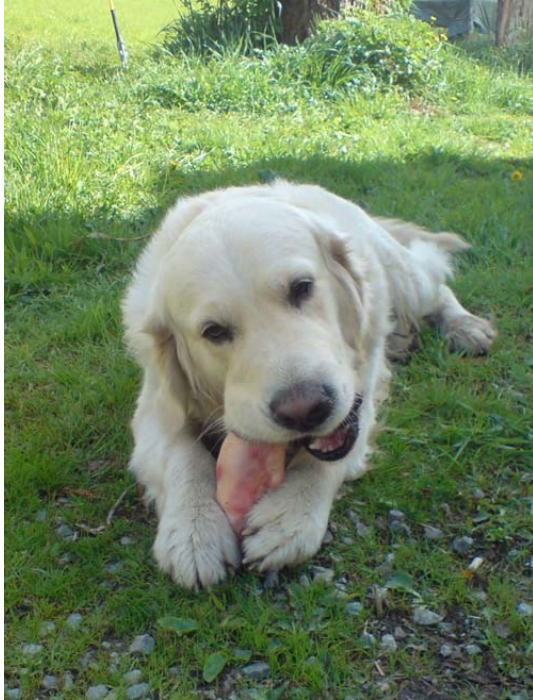


Image Manipulations

Black and White

- Given a rectangular `int[][]` representing an image, create a new `int` 2D array with the same dimensions
- Extract every `int` (pixel) in the array, and convert it to a binary array (`intToBinaryArr`)
- Extract the Red (`getRed`), Green (`getGreen`), and Blue (`getBlue`) values of the binary representation of the pixel
- Compute the average of the (RGB) color components, and use it to compute the grayscale value of the pixel (`toGrayscaleRGB`)
- Store the grayscale value at the same position into the new array

Image Manipulations

Black and White

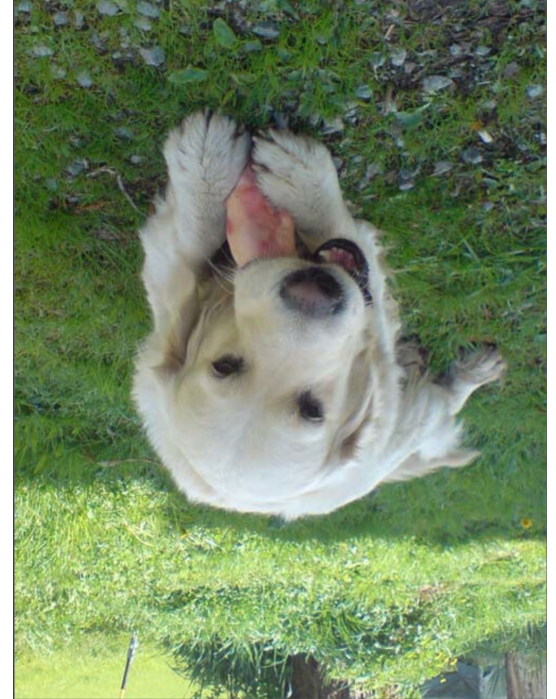
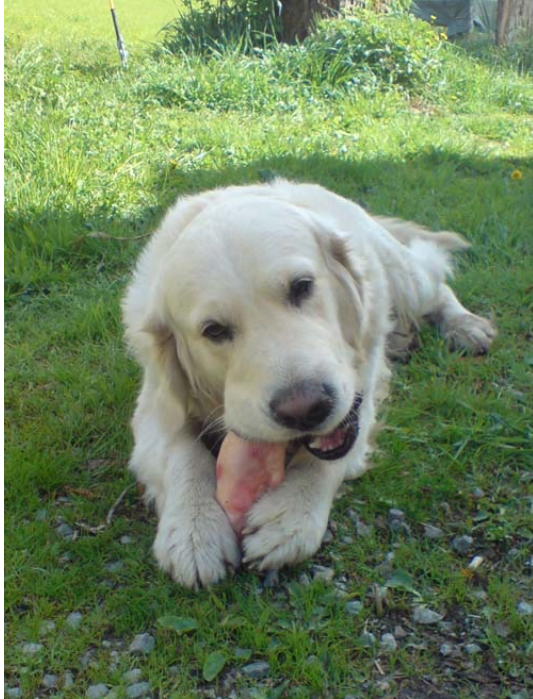


Image Manipulations

Vertical Flip

- Given a rectangular `int[][]` representing an image, create a new int 2D array with the same dimensions
- The orders of the rows in the new array should be reverses
- The values within the rows should have the same order, but *row 0* should be *row (n-1)* in the flipped array, *row 1* should be *row (n-2)*, and so on