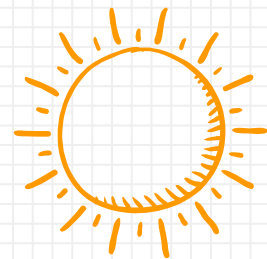


EE16A Lab 108



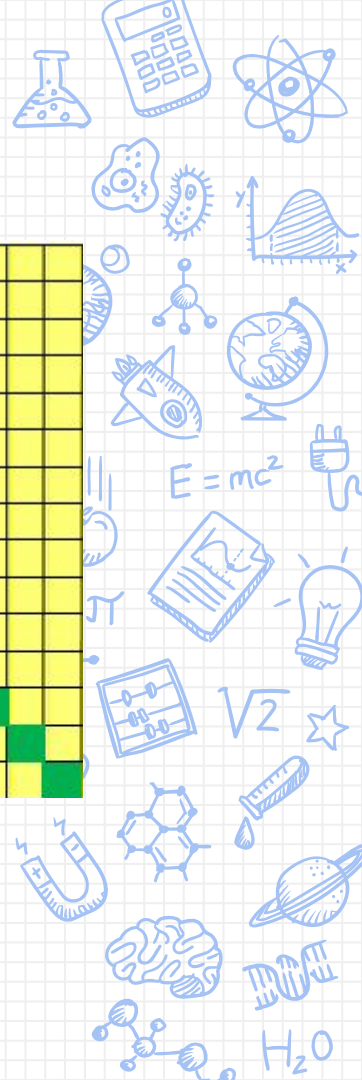
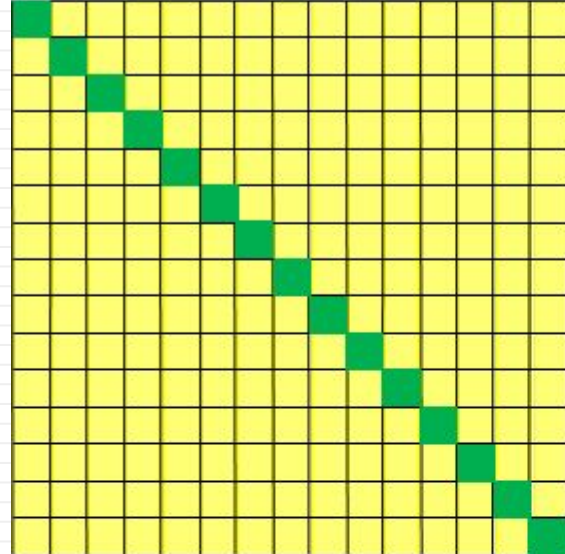
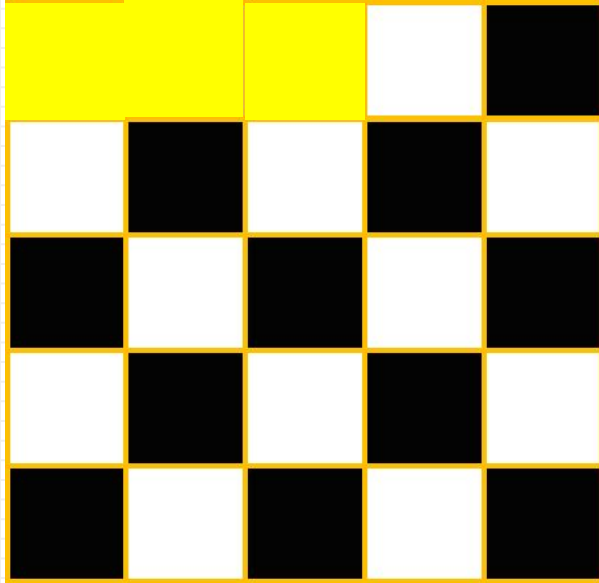
Fri 11-2pm

TA: Seiya

LA: Cameron, Ed, Ryan



Last Week: Single-Pixel Scanning



[illegible]

**circuits
and stuff**

$$E = mc^2$$
 $\sqrt{2}$ 

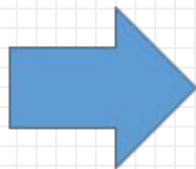
Last Week: Reshaping with H

$$\vec{i} = \vec{s} * H^{-1}$$

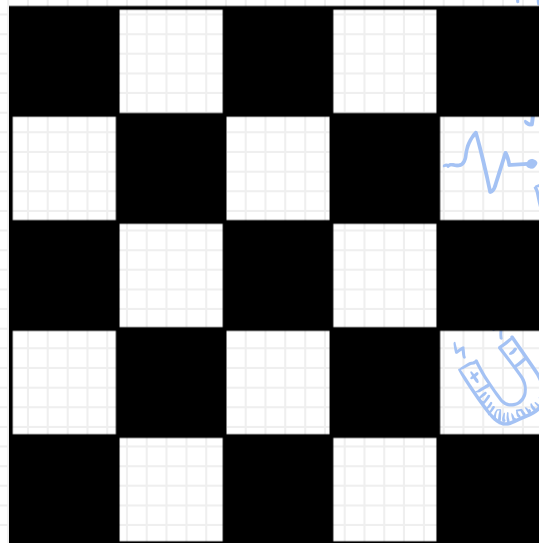
$S = [$

0	255	0	255	0	255	0	255	0	255	0	255	0	255	0	255
0	255	0	255	0	255	0	255	0	255	0	255	0	255	0	255

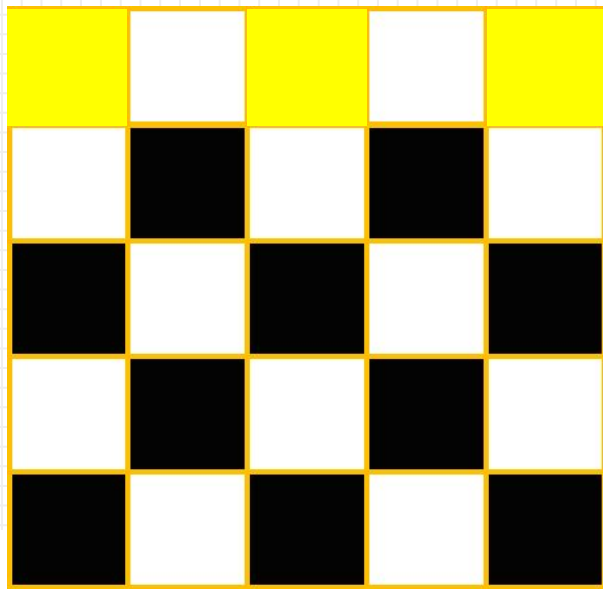
$]$



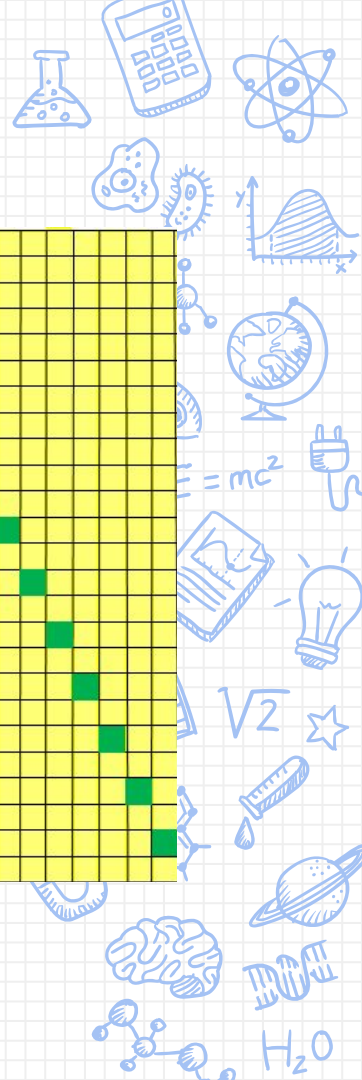
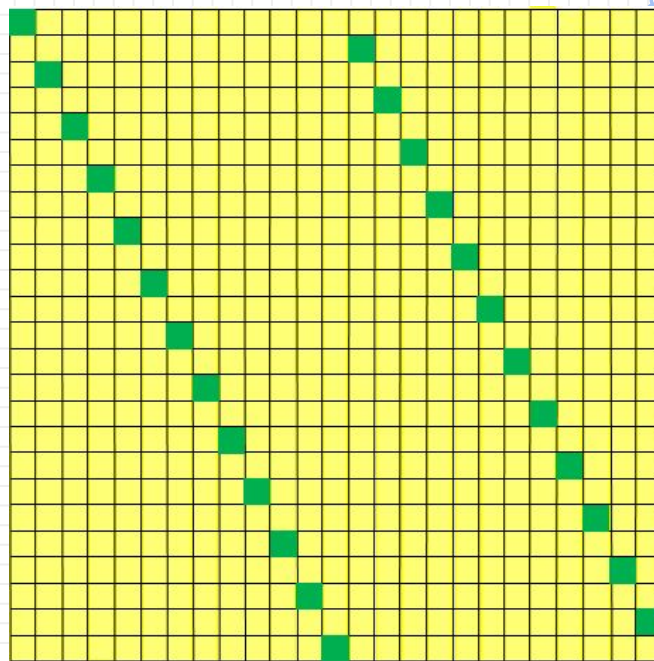
Real World Object



Last Week: Single-Pixel Scanning



circuits
and stuff





**circuits
and stuff**

0	0	0	0	0	0	0	0	...
0	0	0	0	0	255	255	255	...
255	255	255	255	255	255	255	255	...
255]							

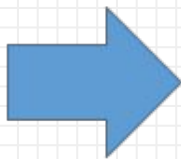
Last Week: Reshaping with H1

$$\vec{i} = \vec{s} * H_1^{-1}$$

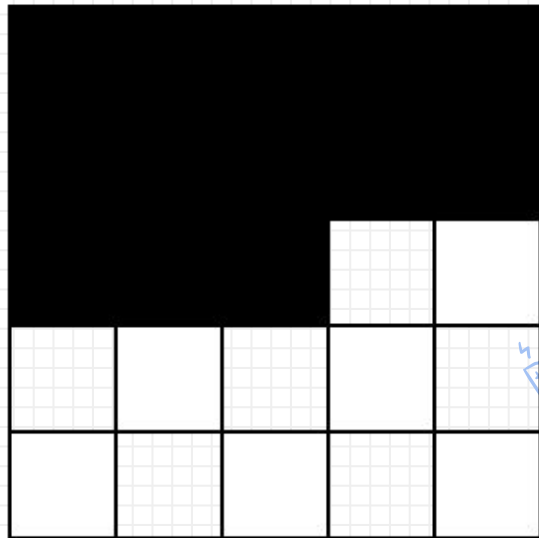
S = [

0	0	0	0	0	0	0	0	0	0	0	0	0	255	255	255
255	255	255	255	255	255	255	255	255							

]

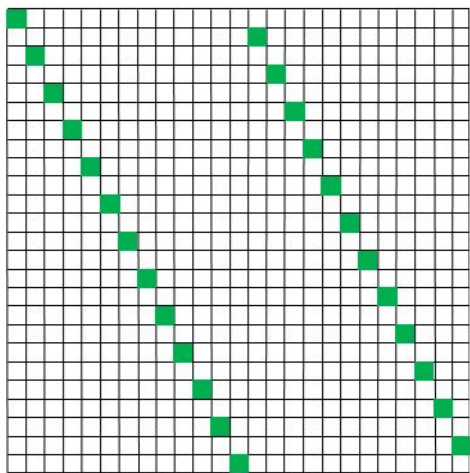


Real World Object



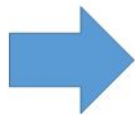
Last Week: Reshaping with H1

H1

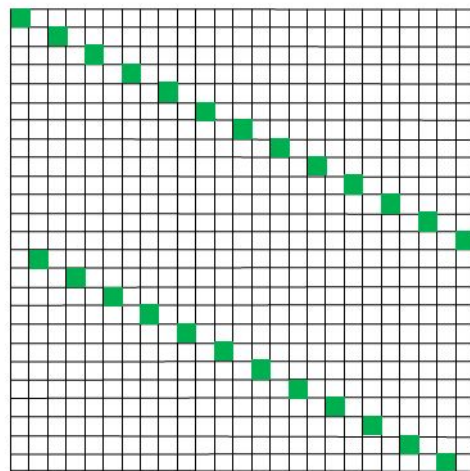


$$\vec{l} * H_1 = \vec{s}$$

Measurement



Inverse of H1



$$\vec{l} = \vec{s} * H_1^{-1}$$

Reconstruction



Last Week: Reshaping with H1

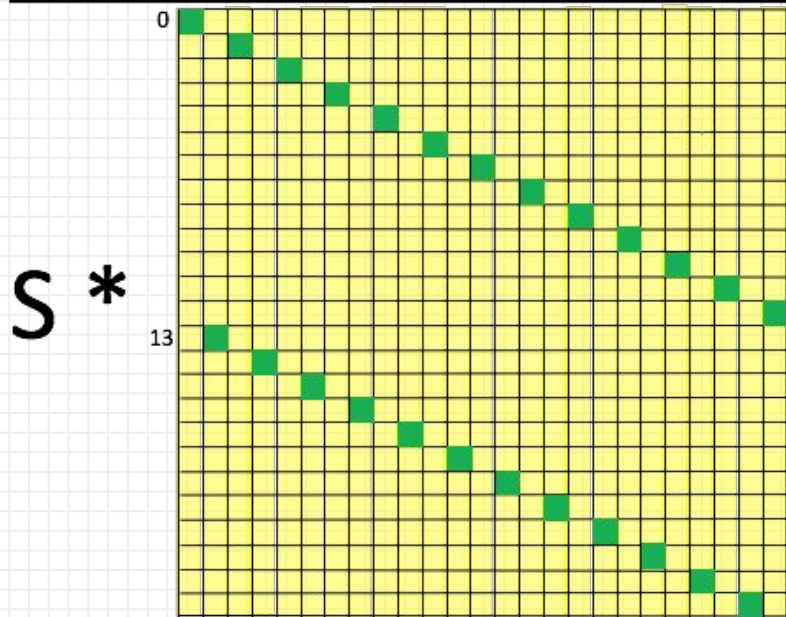
-1

$$\vec{l} = \vec{s} * H_1^{-1}$$

$S = [$

0	0	0	0	0	0	0	0	0	0	0	0	0	13	255	255	255
255	255	255	255	255	255	255	255	255	255	255	255	255	255	255	255	255

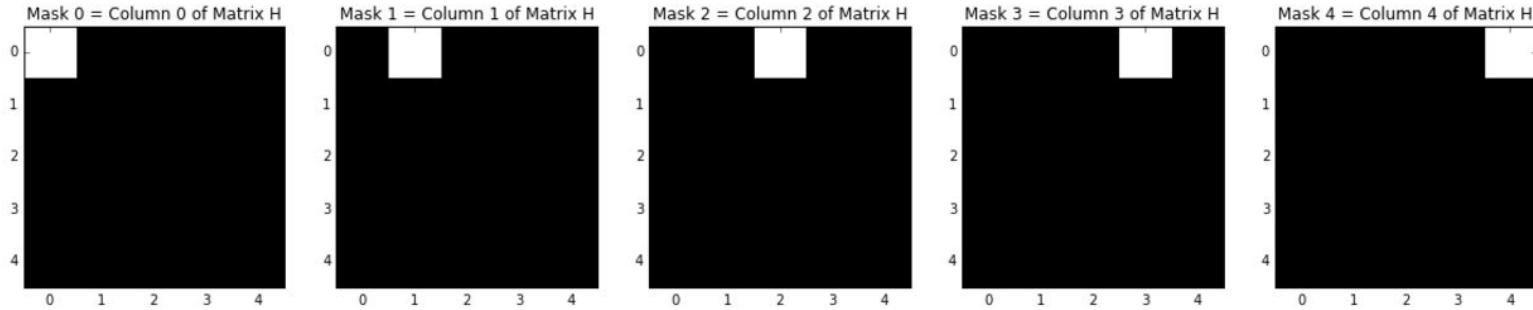
$]$



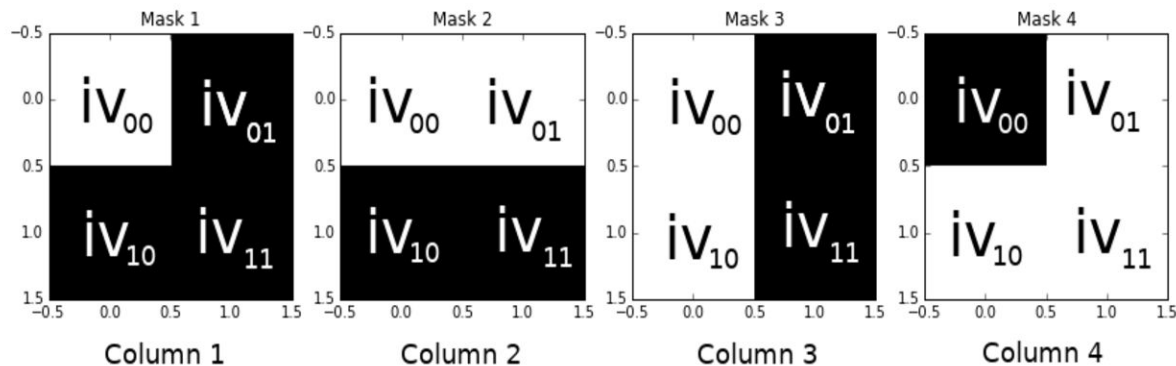
$=$

0	255	0	255	0	255	0	255
0	255	0	255	0	255	0	255
0	255	0	255	0	255	0	255
0	255	0	255	0	255	0	255

Single-Pixel Scanning



- ✗ Each column of H describes one measurement
 - ✗ Before, measured each pixel individually and exactly once
 - ✗ The measured value is the brightness of that pixel
 - ✗ What happens if we mess up on a particular measurement?



- ✗ Can we measure multiple pixels at a time?
 - ✗ Measurements are now linear combinations of pixels
 - ✗ Pros / cons?
 - ✗ How to choose H ?
 - ✗ Will **any** H matrix work? Are some better than others?

Notes



- ✗ Can adjust projector settings
 - ✗ Focus with dial on side
 - ✗ Brightness, contrast, sharpness
- ✗ If sensor readings are less than 100, get a new ALS
- ✗ If you aren't checked off for Imaging 2, do so today
- ✗ **Check off:** lab.ee16a.com
 - ✗ If your name **does not** appear, submit to:
tinyurl.com/lab108-checkoff
- ✗ **Ask Questions:** tinyurl.com/lab108-Q

