EE16A Lab 108

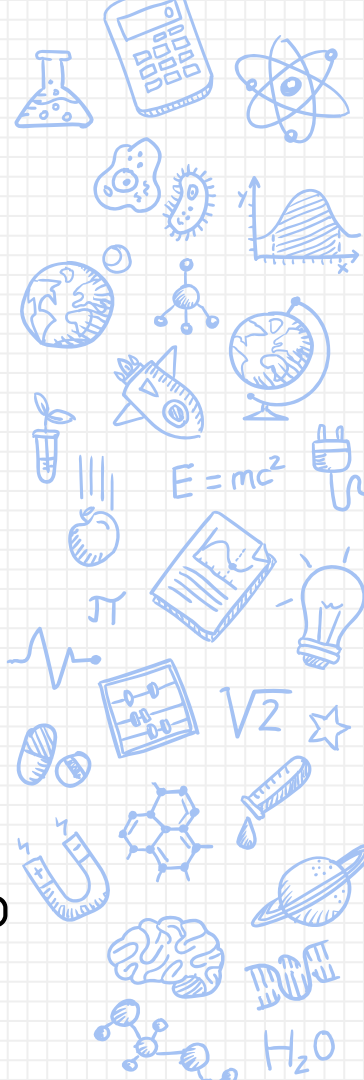
Fri 11-2pm

TA: Seiya

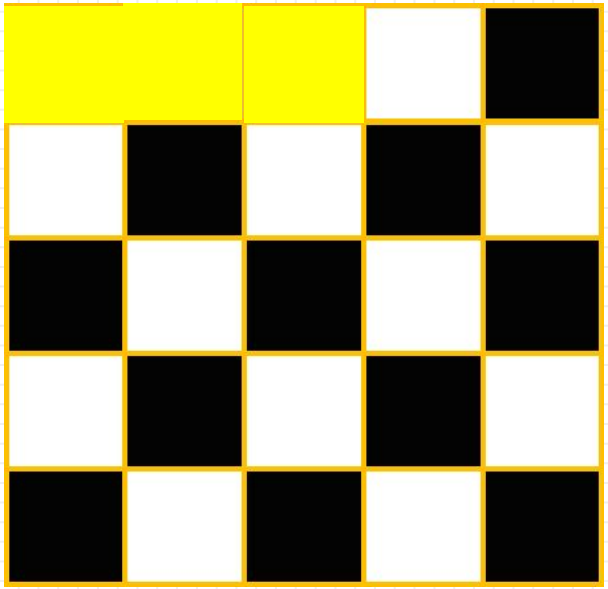
LA: Cameron, Ed, Ryan

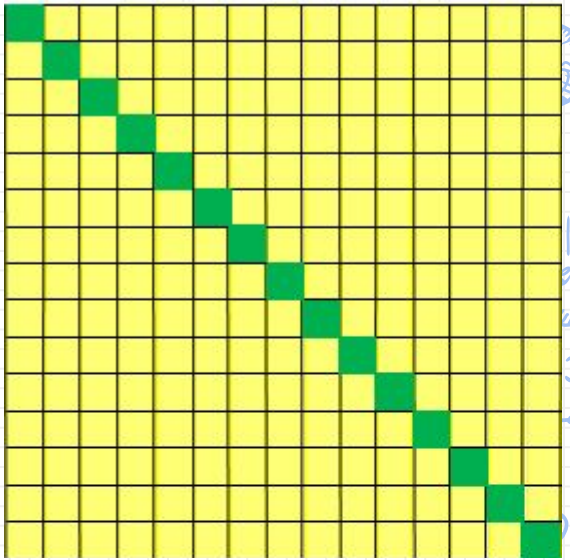
Announcements

- ✘ Midterm: **Friday 2/24 8-10pm**
- ✘ Buffer Week Schedule on Piazza
  - ✘ Can make up any Imaging Lab: Parts 1-3
- ✘ Take Home Quiz: Part of HW4
  - ✘ Use it to assess your current knowledge before drop deadline on **Friday 2/17**

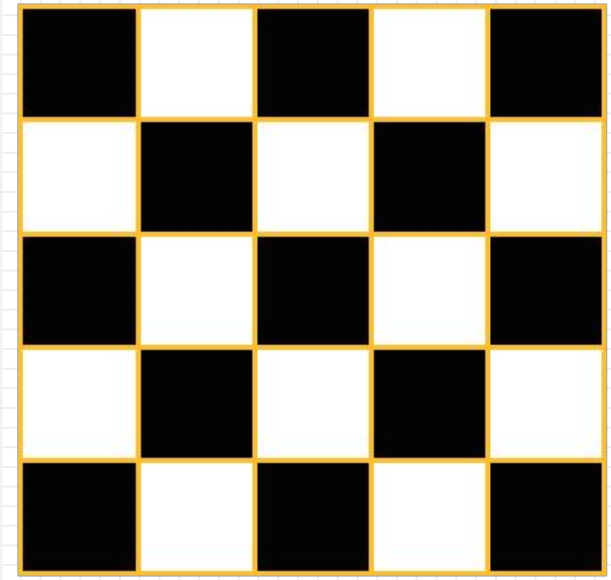


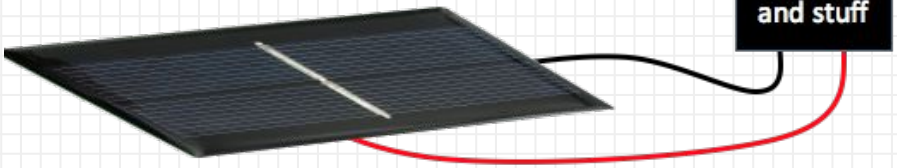
Last Week: Single-Pixel Scanning





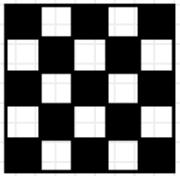
Last Week: Scanning with H





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	]							

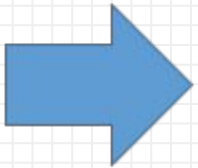


Last Week: Reshaping with H

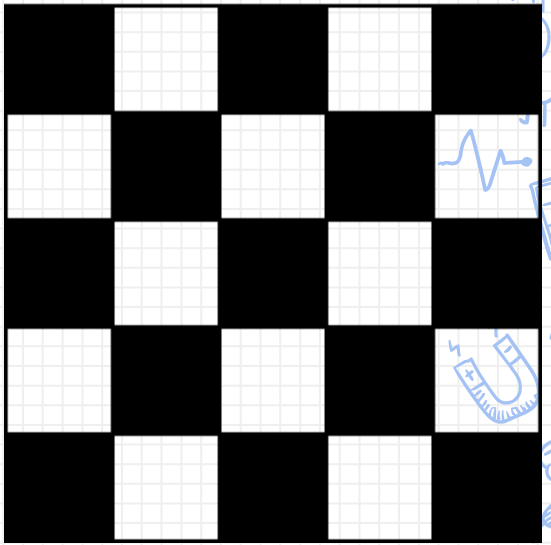
$$\vec{i} = \vec{s} * H^{-1}$$

S = [

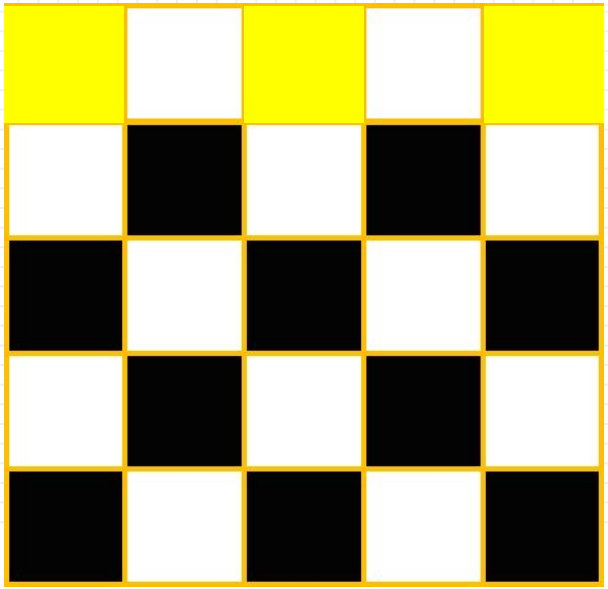
0	255	0	255	0	255	0	255	0	255	0	255	0	255	0	255
0	255	0	255	0	255	0	255	0	]						

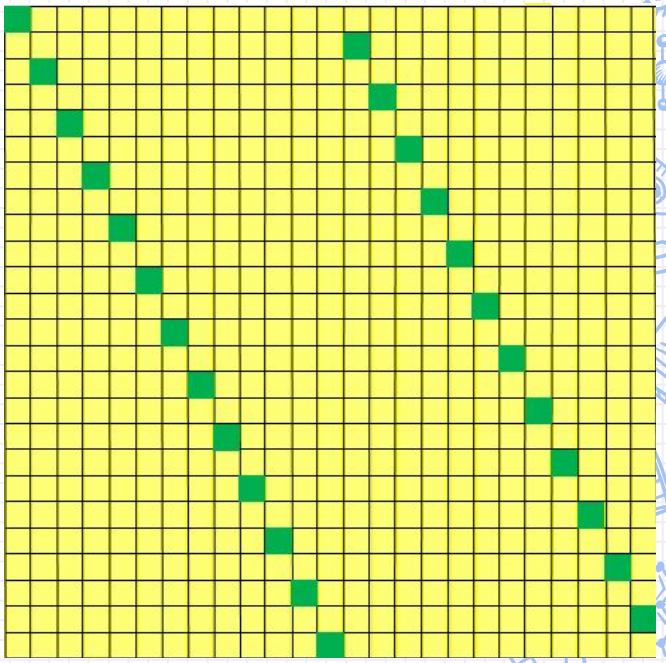


Real World Object

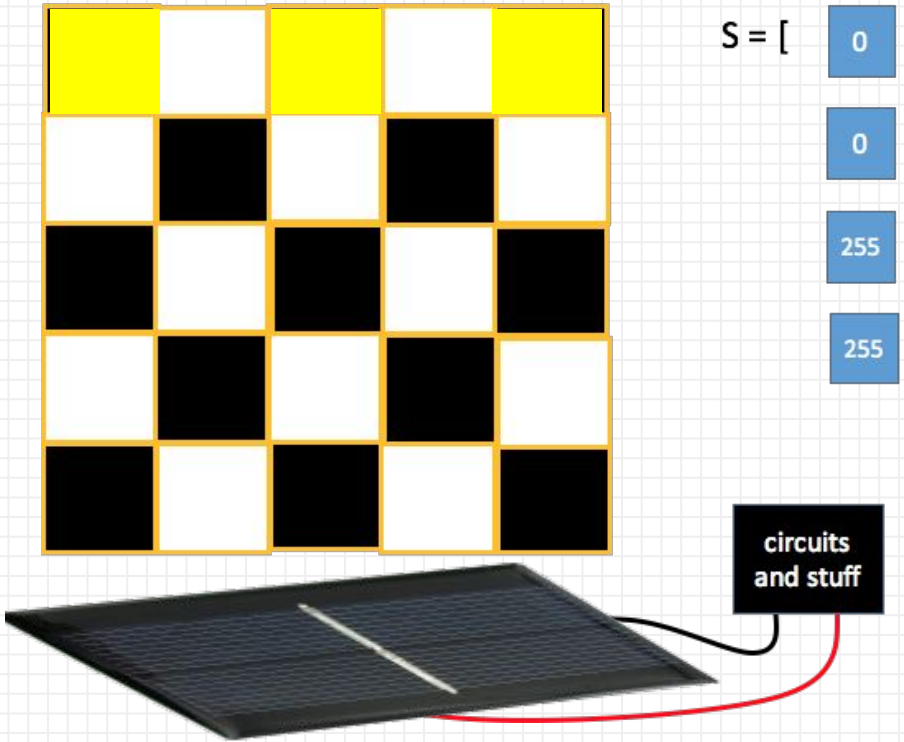


Last Week: Single-Pixel Scanning





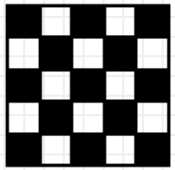
Last Week: Scanning with H1



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

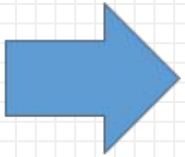


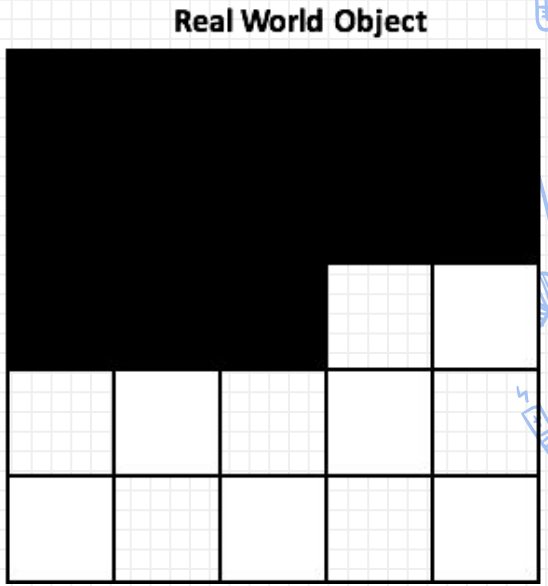
Last Week: Reshaping with H1

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

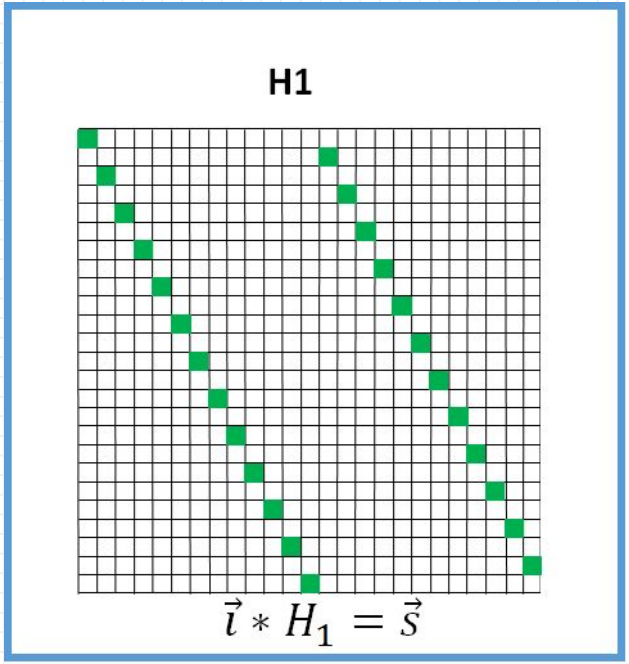
S = [

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	]						

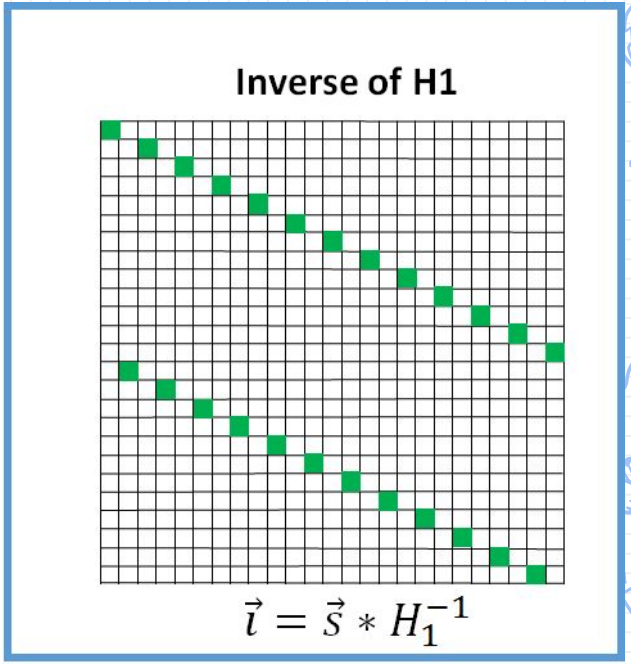




Last Week: Reshaping with H1



Measurement



Reconstruction

Last Week: Reshaping with H1

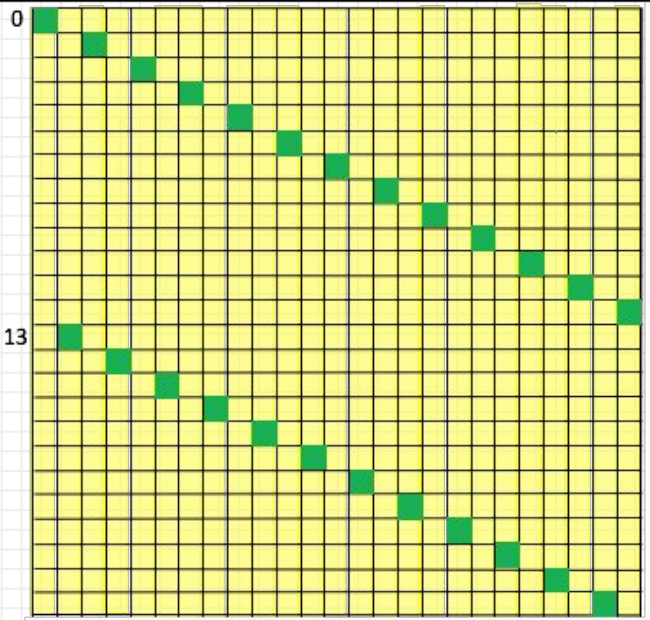
$$\vec{i} = \vec{s} * H_1^{-1}$$

S = [

0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	0	0	0	0	0	0	0	0	0	0	0	255	255
255	255	255	255	255	255	255	255	255					

]

S *



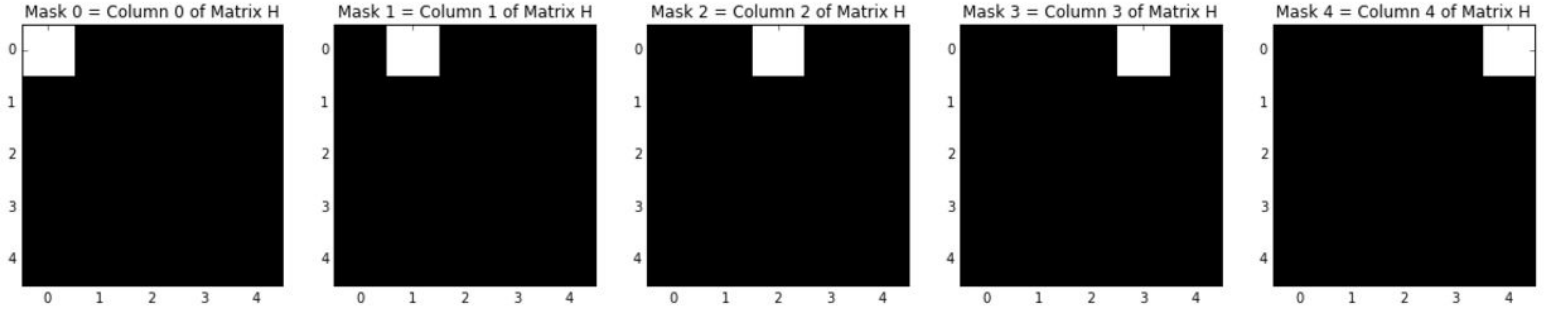
=

[

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							

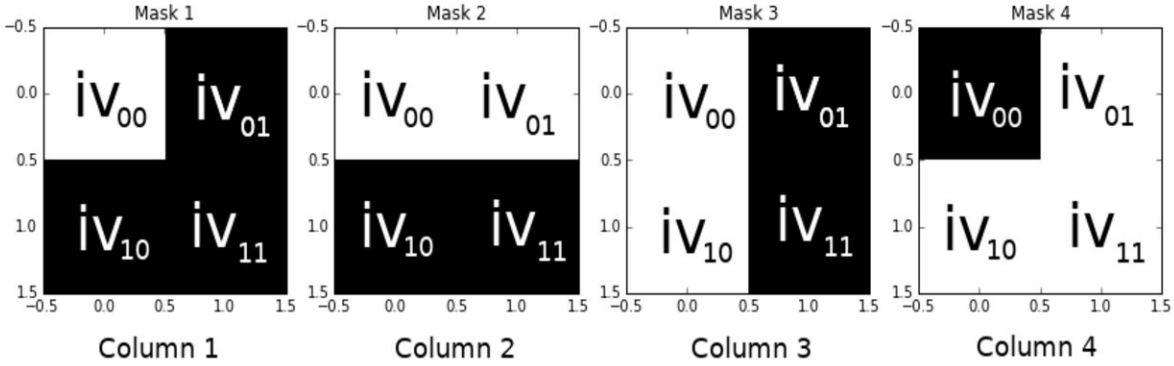
]

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?

Today: Multi-Pixel Scanning



- ✘ 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

- ✘ If sensor readings are less than 100, get a new ALS
- ✘ Create a ‘data’ directory in the imaging 3 folder
- ✘ 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
- ✘ **This Presentation:** tinyurl.com/lab108-img3