

Color images:

- if img is a 640x480 color image, what will
 [a, b, c] = size(img)
 give for a,b,c?
- what if img is grayscale?
- What does A = img(:, :, 2) do?

Thresholding:

- When is it useful and when is it not useful?
- What are some of its downsides? - noisy, colors change depending on lighting conditions or even where they are in the camera's field of view

Bounding Boxes:

- What are they good for and not good for?
- When could they be really bad? - outliers
- Some alternatives? Centroids, median vectors, blobs, (depends what you're doing)

Big O:

- What does it measure?
- What is Big O for:
 for i=1:length(n)
 for j = 1:length(n)
 count = count + 1;
 end
 end
end

```
for i=1:length(n)
    for j = 1:7
        count = count + 1;
    end
end
```

```
for i=1:length(n)
    for j = i:length(n)
        count = count + 1;
    end
end
```

- BFS/DFS
- inserting/deleting on start/end of singly/doubly linked list

Sorting:

- Quicksort – how it works, its weaknesses, the in-place version, its worst-case and average-case big O
 - Quickselect
- Mergesort – how it works, can it be done in place?, big O
- Selection Sort – how it works, big O

Linked Lists

- lists vs. arrays, why use one or the other
- doubly vs singly linked list
- order of numbers in singly linked list:
 - [5 3 9 0 4 9 2 5 1 3 6 7] (header is first node, then list length)
- same kind of thing for doubly linked list
- how to do an insert and delete in the middle of the list

Stacks/Queues

- FIFO/LIFO
- correspondence with BFS/DFS
- could you implement them with only singly linked lists? (stack yes, queue kind of (use 2 stacks))

DFS/BFS

- What are they good for?
- When might I use one over the other?
- What can cause problems for them? (cycles)

Blobs

- What are neighbors and what are 2 ways to define them in terms of images?
- What algorithms can I use to find blobs?
- Relationship with connected components (equivalent)

Graphs

- What is a graph?
- How could I represent it in Matlab?

Memory Allocation/Deallocation

- What are the dangers of just always inserting new nodes to the end of a memory block for a linked list?
- What is a freelist?
- How does mark & sweep garbage collection work?