Spatial Media

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Wednesday 6:30pm - 9:00pm
Thursdays 9:30am - 12:00pm

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Essential C++

Two ways to data...

```
// Stack data
poPoint P;
P.x = 10.0;

// Heap data
poPoint* P = new poPoint();
P->x = 10.0;
```

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Essential C++

Two ways to data...

// Stack data
Stack data is generally used for built in data types like int and float and for small user-defined classes, like poPoint.

// Heap data
Heap data is generally used for larger allocations of built-in data types, and for large user-defined classes, like poObject.

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Essential C++

Two ways to data...

// Heap data
+ Any variable with a * in front of it is a pointer.
+ A pointer is just a number.
+ A pointer points to an address in memory.
+ Pointers are lightweight.
+ Pointers aren't scary once you understand them.

Check out this fun pointer video: http://cslibrary.stanford.edu/104/

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Computer Vision (1 of 3)

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Image Processing:

Pixel-level operations

Goal of data reduction

Less information, better information

Leading to higher level information

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Thresholding

Grayscale --> Binary (information reduction)

```
if ( image[index] > Threshold )
    image[index] = 255;
else
    image[index] = 0;
```

Separates what you care about from
what you do not care about.

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Image thresholding techniques:

Background subtraction

Edge detection

Motion detection

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Background subtraction algorithm:

1. Capture image of background

2. Capture current image

3. Subtract current image from background

    Difference = abs(Current - Background)

4. Apply threshold to the difference

Note:
Background may be adapted / evolved over time to account for changes in lighting

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Assignment 3a

Project 1 – Design Presentation

1. Flesh out your concept. Create a series of storyboards (minimum three) that illustrate the full interaction. Each storyboard should include caption text.

2. Consider the visual design of your project. Create at least one image that fully captures the design and overall aesthetic. This image may be based upon your storyboards.

3. Consider the physical design of your project. Create three dimensioned drawings: plan, elevation and section. Include a person in the drawings to help indicate scale and satisfy physical constraints.

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Assignment 3b

1. Shoot three pairs of photos in three locations. Each pair should should consist of a photo with only the background, and a photo with the background and a foreground object. Use a tripod or camera stabilizing device.

2. Write a program that performs background subtraction. It should display three images in a row: the two source photos, and the image resulting from the background subtraction. Determine the best threshold for each of the photo pairs. Edit your program to switch between the three photos pairs, when you press 1, 2 or 3.

3. Write a new method for smImage called “somethingThere”. Your method should take four variables that define a rectangular region: x0, y0, x1, y1. Your method should return a bool. If the area in the image where the rectangle lies is more than 50% “full”, it should return true. Otherwise it should return false. Test this method on the product image of your three background subtraction examples. It should detect the absence or presence of the foreground object.