

Computer Science 134C

Introduction to Computer Science, in Python

Lecture #19 (Classes IV)

October 29

Keywords clustering, inheritance, Images
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We continue implementation of basic classes.

1. Questions?
2. Finishing up the k-means clustering algorithm.
3. Application: Pitch locations.
4. The Python Image Library (PIL) and an image filter mechanism; used in lab today.
 - (a) PIL provides a `Image` class that allows you to read, manipulate, and save basic images.
 - (b) We've written a `Filter` class that you "snap onto" images. The filter provides a method for *wrapping* a process of manipulating pixels.
 - i. There are `width` and `height` properties that allow you to access the image dimensions.
 - ii. Every `Filter` has an accessor method `before(x,y)` that allows you to access the `Color` of the pixel before manipulation.
 - iii. The `Filter`'s main purpose is to define an `after(x,y)` method that defines the `Color` of each pixel after the filter has been applied.
 - (c) We develop new `Filters` that *inherit* the default actions of the `Filter` class.
 - (d) Example: The `PlainFilter` - a clear-glass filter.
 - (e) Example: The `GrayFilter` - a monochrome filter.
 - (f) Example: A filter to build color palettes and, possibly, recolor images.