COMP 150 Introduction to Computing

Introductory Lecture

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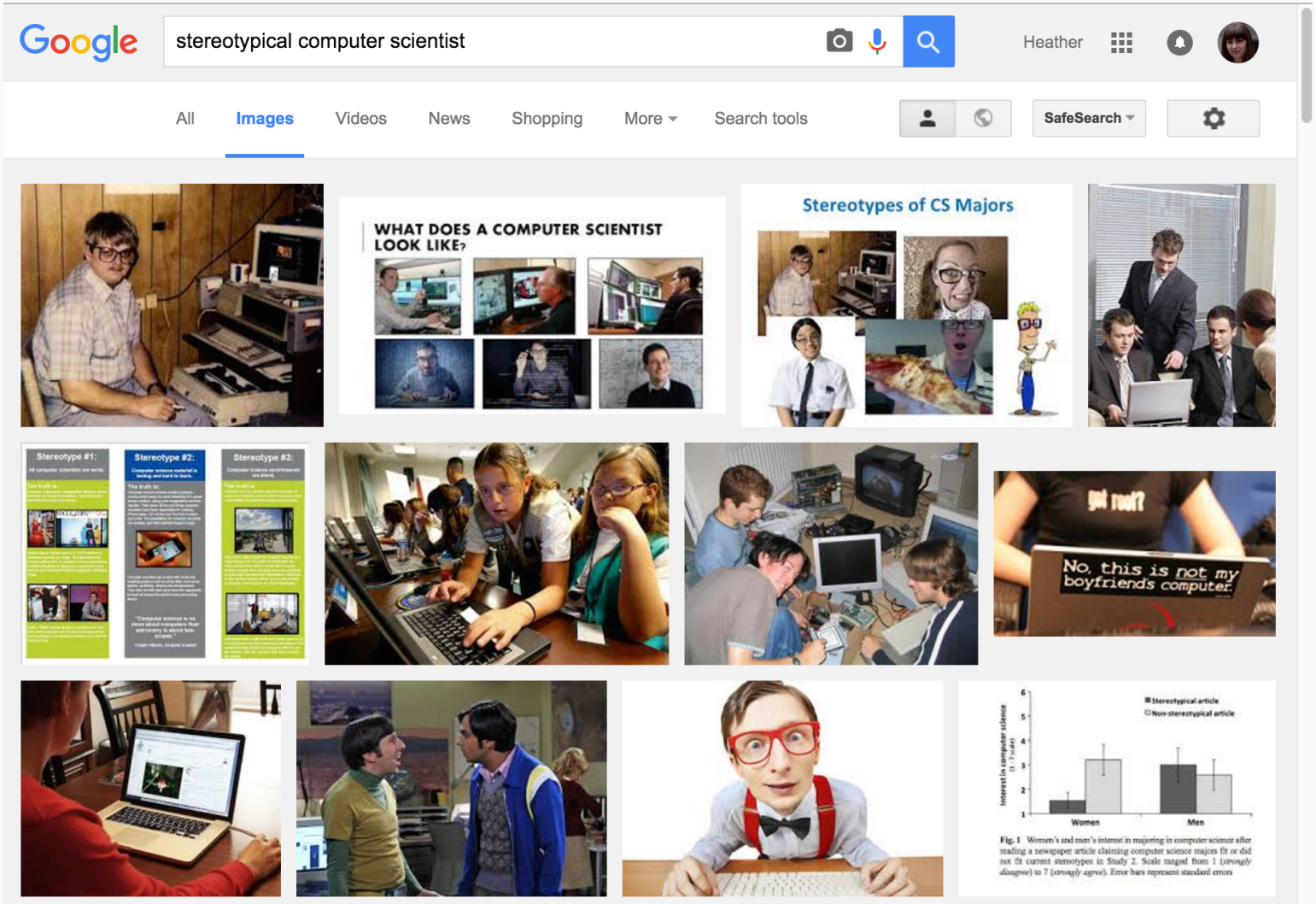
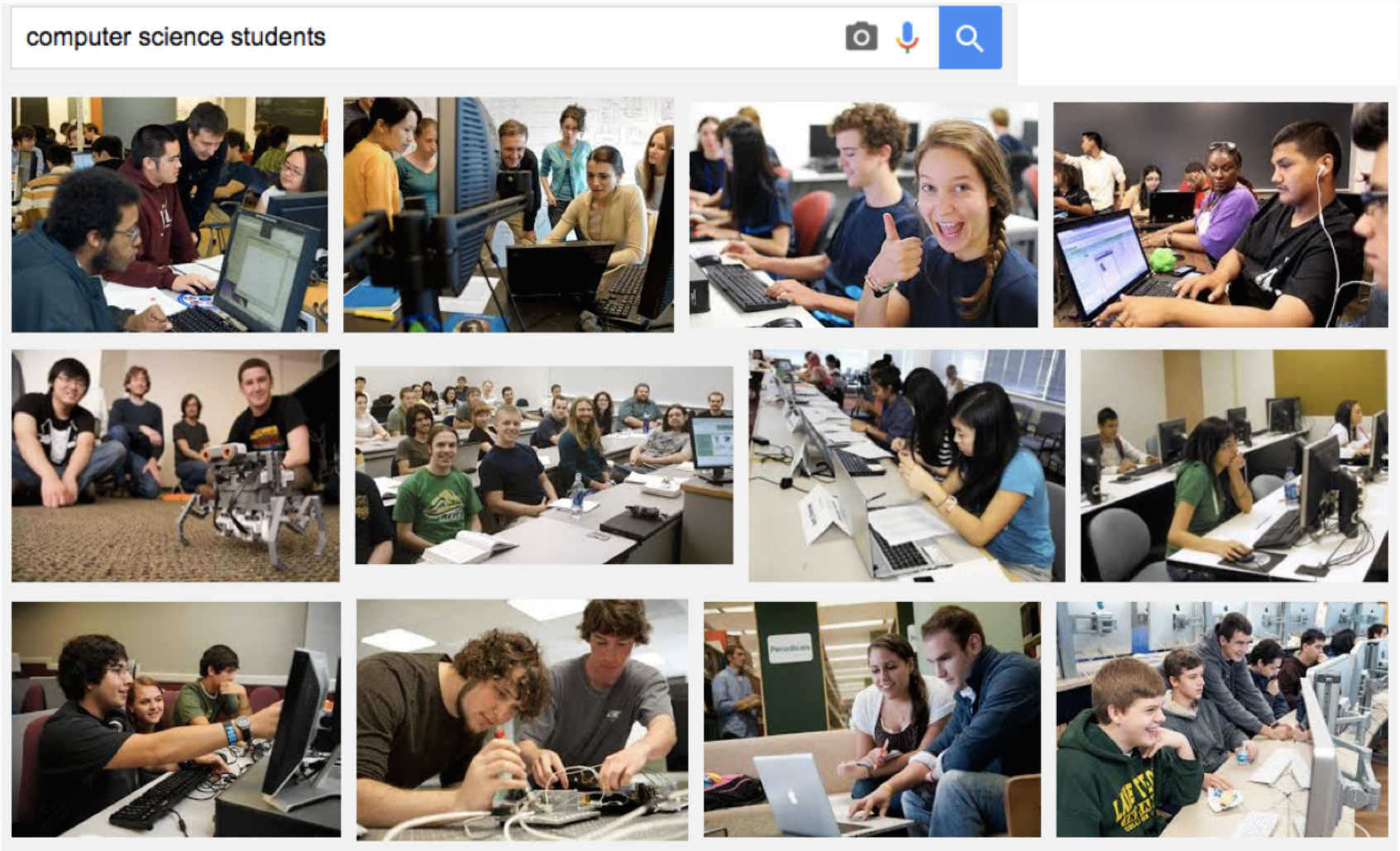
Who studies computer science?

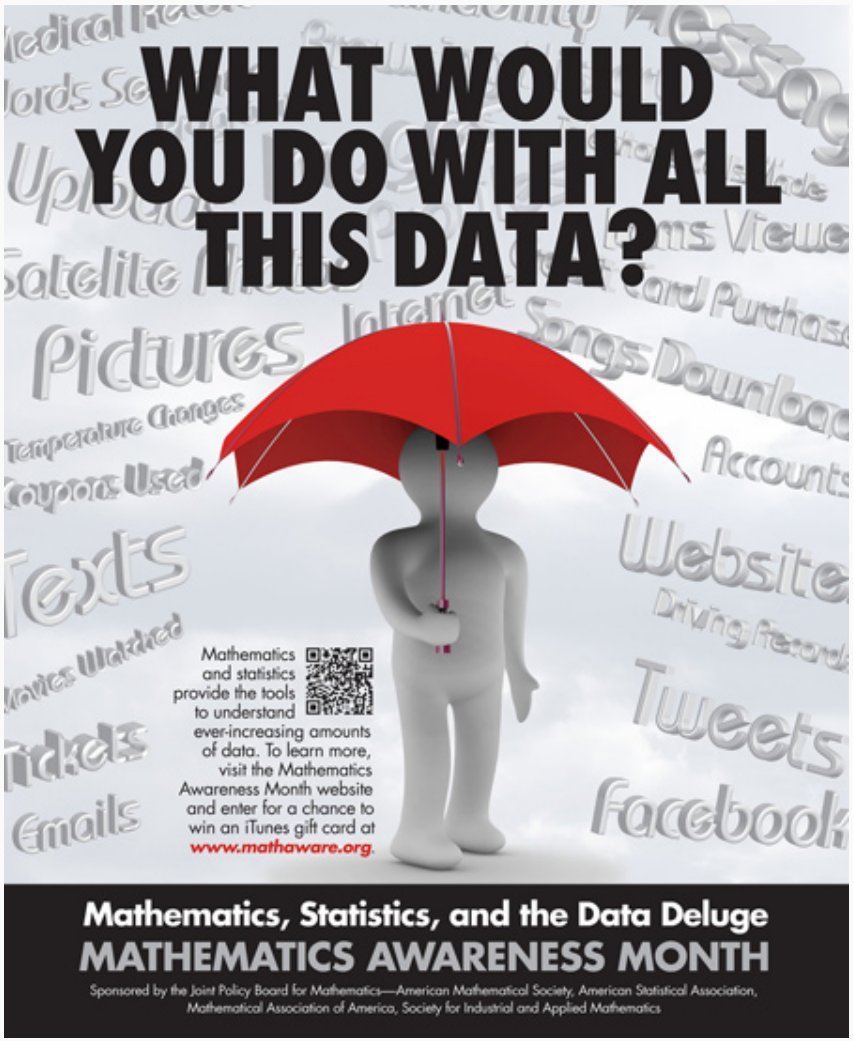
Who studies computer science? Stereotype



Who studies computer science? Reality



Data, Data Everywhere



Computer Science Skills Needed Across Disciplines

“Computing may be the fourth great domain of science along with the physical, life and social sciences”

-Peter Denning

http://www.americanscientist.org/libraries/documents/20108101750328103-2010-09Denning-ComputingScience.pdf

Computer Science Centers on Algorithms

Algorithm:

- Unambiguous, step by step instructions for how to accomplish a particular task in a finite amount of time

What we'll focus on in COMP 150

Programming in Python

- Python is a simple, yet powerful, language to learn and understand (close to English)
- Even beginners can write programs to simplify their own personal tasks

Applications

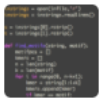
- Graphics
- Data visualization

What's going on underneath Python

- Machine language and assembler code
- Computer hardware

The syllabus and assigments are posted on the class website

http://hwheeler01.github.io/comp150/



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Syllabus Resources

Course Description

This course provides a broad survey introducing the many layers of the computer science discipline, emphasizing the computer's role and limitations as a tool for describing, organizing, and manipulating information applicable to many disciplines. Topics include binary logic expressed in electronic circuitry, machine architecture, basic programming in the very accessible language Python, data organization, the potential and limitations of machines, and useful tools.

This course serves as a terminal course for students who want a one-course introduction to the field, as well as a preliminary course to upper-level computer science offerings.

Example script:

```
'''Given: Two positive integers a and b.
Return: The integer corresponding to
the square of the hypotenuse of the right
triangle whose legs have lengths a and b.'''

def hypSq(x, y):
    hs = int(x)**2 + int(y)**2
    print("Hypotenuse squared = " + str(hs))
```

Pair Programming

A method of programming in which two people work together at one keyboard

- One person, the “driver”, types at the keyboard
- The other person, the “observer” or “navigator”, reviews each line of code as it is typed, checking for errors and thinking about the overall design
- Switch roles often – at least every half hour

http://www.wikihow.com/Pair-Program

Pair Programming

Some benefits you can expect:

- better code (simpler design, fewer bugs)
- shared knowledge throughout your team
- better time management, higher productivity
- higher morale (more fun!)

http://www.wikihow.com/Pair-Program

Pair Programming

First:

- Get to know each other with People BINGO
  - Fabulous prizes available

Then:

- Choose your own partner OR
- If you'd rather leave it up to chance, we will use a Python script to randomly assign you a partner

Get Python Running

- If using your own computer: Download Python (Tutorial 1.1.3)
- Download example files
- Run madlib.py (Tutorial 1.2.2)
- Open madlib.py in IDLE and run it within IDLE
- Get help if things aren’t working