Fall 2010 - CS 190
Exam 2 Study Guide

Note: this is not meant to be an exhaustive list. This is meant to give you a starting point and some directions to study. You can (and should!) also review your old quizzes, pre-class exercises, end-of-chapter problems, homeworks, etc.

Robotics stuff:
- What is HRI?
- Why is it important to the future of the field of robotics?
- List the 5 roles of interaction and give a brief description of each.
- What role does awareness play in HRI?

- What role can robots play in the field of agriculture?
- What are some advantages robots have over humans in the field of agriculture?
- What is the only successful agricultural robot? Why has this robot been successful while others are not?

- What are the three laws of robotics?
- Know and be able to summarize each of the 9 stories in I, Robot.
- Why were the stories in I, Robot remarkable, given the time in which they were written?

- Define (and give examples):
  - exteroceptors
  - interoceptors/proprioception
  - dead reckoning
  - active sensors
  - passive sensors
  - reactive control
  - behavior-based control

Programming:
- What is conditional execution? How does it influence/affect the flow of execution of a program?
  - comparison operators: <, <=, >, >=, ==, !=
  - What is the difference between = and ==?
  - Logical operators: and, or, not
  - What do elif and else clauses do when used with an if-statement?
  - What are the two program constructions we've seen for iterating/looping over code?
    - Give the general form of each.
  - What's an infinite loop and how can we prevent one?
  - How does a for-loop work?
  - What does the range function return?
  - What are boolean values?

- What are lists?
• How do you define them in python?
• How can we get a specific element out of a list?
• How can we find out how many elements are in a list?
• How do we use lists in conjunction with for-loops?
• How can we search for a specific value in a list?
• What is the index of the first element in a list?
• What does the error "index out of bounds" mean?
• What is 'slicing' in the context of lists?
• Given a list referenced by the variable l, What does the statement l.sort() do?
  ◦ l.append("Bob")?
  ◦ l.reverse()?
• What does l[startnum:] return?
• What does l[startnum:stopnum] return? Be specific about which elements are included.
• How can we change the value in a list at a specific position?
• How can we concatenate a list with another list?
• Describe an color image, computationally. Grayscale image.