Supplemental Class Notes
Unit A – Introduction to Robotics
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Pitch, Yaw and Roll :

Pitch is like when you nod your head 'yes'. Yaw is like when you nod your head 'no'. Roll is like bringing your left ear to your left shoulder and then your right ear to your right shoulder. Go here for more:

http://agents.sci.brooklyn.cuny.edu/cc30.03/notes/rpy.pdf

Where did the word robot come from? :

Robot comes from the Czech word "robot," which means "worker." In 1923, Karl Capek, a well-known, Czech, science-fiction writer at the time, wrote a futuristic thriller about a nightmarish scenario in which the machines have taken over (a la, the "Terminator") and implanted circuitry in humans to make them into mindless zombies willing to serve them as workers or "robots."

Is it possible to replace human beings with robots?

It is possible to replace human beings with robots. For example, they can be used for military purposes and jobs that are dirty and dangerous.

Lego Robot building tips:

- When building a robot if you misplace one piece then the robot will not work. For example, the gears need to be in contact with each other in order to move the wheels.
- Lots of customization is possible with robots. For example – big wheels vs. small wheels. You can use gearing up and gearing down to change speed or torque.
- Cooperation makes the job much easier. It's helpful if people can get along and work well together.
- It's not about how the robot looks but how it's connected.
- Building robots is easier than you think. Until you try you don't know how hard or easy something is.
- It is easier to build a good robot if you can identify the different parts. Study your vocabulary.
- Matching concept; using the blueprint to build the robot. Some felt it helped stretch your mind some felt it took too long and was too confusing.
- Stabilization is a challenge in building robots. You need many many actuators.

Programming tips:

- The robot is complicated but commands are simple.
- Actuators take input signals and turn them into motion.
- When only one motor is moving and the other is not, the robot turns.
- The amount of time that the robot turns will influence the angle of the turn. It was necessary to use less time than they thought for creating the square.
- There are many ways to write a program to complete the challenge.
- Programming controls the mind of the robot which is also called the controller.
- You can draw icons to program and beam that over to the RCX. You plug in the tower, connect it to the laptop, have it facing the RCX and hit the arrow.
- Commands need to be very specific when programming.
- Programming is challenging. Also, learning the MAC is hard.