**IROB Session 2 - Overall plan & TO DO**

**(fitting in Arduino)**

**Themes:**

* Locomotion
* Manipulation
* Artificial Intelligence
* “Real” Programming (& Real Hardware)
* Systems, Complex Systems & Swarming

Themes throughout:

* Design
  + Elegant Design
* Construction
  + Good construction
* Journaling/Planning
  + Being thorough
* Discussion
  + Being constructive
* Presentation
  + Clarity
* Algorithms
  + Human robots
  + Pseudocode
  + Comments
* Mechanics
  + Gears, simple machines, kinematics

**TO DO:**

* **CHECK MAILBOX, CIMRs**
* **Check academic calendar - stay up to date**
* Clean, Org. Classroom
* ~~Install Mindstorms on better laptops~~
  + ~~want 6 laptops that function reliably (with battery)~~
* ~~Find good simple C tutorial~~
* ~~Gait worksheet including center of gravity~~
* **Photocopy** 
  + **~~Coloring sheets (Day 2 - low priority) (x24)~~**
  + **~~Kit Inventory Sheet (x6)~~**
  + **~~Copies of simplebot description sheet (in classroom) (x6)~~**
  + **~~\*\* Need lab form? \*\* if so, photocopy (x12)~~**
  + **~~Copy of roster for Andy (1)~~**
  + **~~General Robotics - Make sure done for afternoon!~~**
    - **~~Make sure presents info~~**
    - **~~Add questions (on back)~~**
    - **~~Make printable~~**
    - **~~Just modify posters, add 1 page of insightful questions~~**
* **~~\*\* Fill out Supply Request form - give to Maureen \*\*~~**
* **~~Order books from Amazon~~**
* ~~Org old binder~~
* ~~Org new binder~~
* ~~Double-check that post-assessment is graded - Due Tues!~~
  + ~~Andy will let me know when done~~
    - ~~Goal- submit before evening meeting Monday~~
* Work on syllabus
  + Consider replacing some projects
  + More human robots
  + How to keep things moving
* **~~Get worksheets done for first 2 days of class~~**
  + **~~Task List /Algorithm~~**
    - **~~add questions~~**
  + **~~Information Flow~~**
* **~~Create New Evaluation Spreadsheet~~** 
  + **~~(rows = day numbers, cols = student names)~~**

* **Investigate Arduino**
  + **Brainstorm (how to integrate)**
  + **Get solid on projects, capabilities**
  + **C language**
    - **Development environment**
      * **Free environment from arduino**
      * **Console**
      * **Look at source code**
      * **Think about how this weaves in to themes**
      * **Test everything twice ON ACTUAL LAPTOPS**
    - **Think about tutorials (maybe just base off of python tutorial**
  + **Test all hardware projects**
* Keep regular list of things that need doing
* **Investigate Gradient following and Ball finding**
  + **~~Web - mindstorms site~~**
  + **~~Email ROBOCUP Junior (Galen)~~**
  + **~~Also emailed nxtprograms.com for code/algs~~**
  + **~~Call if don’t hear back in 1 day~~**
* **Andy guest speaker**
  + **Iceland-Bot**
  + **Try out skype (firewall, etc.)**
* Brainstorming:
  + Consider making packet
  + Guest speakers via skype
  + Community involvement
    - Soccer camp guest speaker (or them visiting during Soccer-bot project)
      * Drew or other from soccer camp
  + Tank bot
  + Drawing bot – draw fractals
  + Swarm drawing using bluetooth
  + Segway bot
  + Bluetooth
  + NXT python
  + Ball maze
  + Rube Goldberg
    - smaller groups
    - one step at a time
  + Student project
    - Product to sell
    - Presentation
      * Create powerpoint
      * Present
      * Demo
  + Behavioral:
    - Quiet Mode for Kids
    - Think about progression of sensors
    - Human bots
    - Keep changing tasks at every break, don’t keep beating on same task more than ½ hour.
    - Have kids race each other to get done, have to use other team’s design or teachers (teachers race students to get done)

Topics covered last time:

- Degrees of freedom

- Logic operations

- Basics of AI

~~- Design & construction principles~~

- Elegant Design

- Basics of signals

- Python programming (this time C programming)

- ~~Algorithms~~

- Complex systems

- Some very basic kinematics

- ~~Locomotion~~

~~- Walking gaits~~

- Manipulation

- Simple Machines

- 3 Laws of Robotics

~~- Information Flow~~

- Natural v. Built Systems

- Turing Test

- Humans and Technology ("Energy Slave")

- Kinetic Sculpture and Rube Goldberg machines

- Fractals

- ~~Teamwork~~

~~- Being honorable~~

...and lots of Lego Robots!

This week:

- Manipulation

- Artificial Intelligence

- 3 laws of robotics

- Turing Test

- Genetic algorithms?

- C programming

- basic kinematics

- more difficult algorithms/ advanced programming

- Logic operations

- Elegant design

- Full Project presentation

Next week:

- Programming and Circuits

- Natural v. Built Systems

- Complex Systems/Swarming (Netlogo)