Lab 1: Robots Allocation and Operation

Lab Outline

- The robots
- Login to the AIBO Network
- SVN checkout
- Starting Player
- playerjoy and playerv
- Making & Running your own client
- Running Clients Remotely
- ROS
- Robots Allocation

The Robots: What you need for assignment 1.

- iRobot Create Base
  - Can move on a plane
  - Senses Bumps
- Asus Computer
  - “Brain”
  - Runs the player server
  - Runs your client
  - Communicated with the base

The AIBO Network

- This room has its own WIFI Network: AIBO
  - Sandworm and Foxwood are both on this network
  - The SVN repository can be accessed through AIBO
  - Each robot is assigned an IP using static DHCP (see whiteboard)
- Before asking us why SVN will not check out, or why you cannot run your client remotely, make sure you are connected to the Network! (as opposed to the brown wireless which some of you will use to access the internet).

SVN Checkout

- If you want to run your client onboard, you first need to checkout your code on the robot.
- Remember: *svn checkout svn://foxwood/yourgroup/dest_folder*
- Important: Delete all code you've checked out onto the EeePCs when you're done so other student's don't see your code (there are no group permissions on the EeePCs).
- Your player cfg file and client are in the repository.
- You need to be on AIBO for this to work.

Starting Player

- As explained in class, player is middleware that uses a server/client architecture.
- You will need to run the player server on the ASUS whether or not you choose to run the client locally.
- On the ASUS, player commands are prefaced with "robot-" so that you can TAB-find them easily.
- To start the server, use *robot-player config_file* or run *sh runplayer.sh* (a script provided in the repo).
- create.cfg is a config file provided in the repository. It lists the drivers that player needs to use. create.cfg must reside in the home directory of the EeePC.

playerjoy and playerv

- Player bundles a few useful tools such as playerjoy and playerv
- Both require the server to be running, but they can all be run on foxwood/sandworm (if run from the robot, the command must be prefaced with *robot-*).
- Playerjoy:
  - Command: *playerjoy robot_IP:6665*
  - Keyboard control of the robot using i, m, l and j
- Playerv:
  - Command: *playerv -h robot_IP -p 6665*
  - Graphical Interface that allows to subscribe to different drivers and use them.
- Other tools exist (playercam, …). We will use them in a later lab.

Building and Running your own client

- Using the skeleton provided in the repositories, you should be able to quickly put together a client.
- Once you checked out the skeleton code for assignment 1 from the repository, you will first have to build the make files using cmake.
- Cd into the directory which contains your client (where you checked out assignment 1 skeleton code). Make sure it contains the appropriate CMakeLists.txt.
- Run *cmake* . (this will generate the Makefile), followed by *make* to compile your code.
- You should then be able to run your client using *./client robot_IP* (provided you do not change the client too much).

Running Clients Remotely

- Clients can also be run by any computer that is on the AIBO network.
- For example, one could make a client on foxwood and run it using the same command:

  $ ./client 10.100.0.x

- This will sometimes be easier when developing and debugging.
- Playerjoy and playerv are installed on the 404 computers as well and can therefore be run remotely as well.
- The player server still needs to be running on the robots themselves for this to work.
- Once the client is killed using Ctrl-C, to run the client again you will first need to restart the server on the robot.

Robots Allocation

- Each team will be allocated one robot to which they will have prioritized access.
- This does not however mean you cannot use other groups robots. We introduced SVN to make it easier for you guys to transfer your code from robot to robot.