

Lesson 1: Make your KTX-PC Walk!

0 Preparation

0.1 Read KTX-PC User Manual

0.2 Prepare Equipment and Tools

- Personal Computer running Windows XP (Vista and 7 works also, but not recommended)
- Mini USB cable
- 2 Batteries and battery charger

0.3 Charge battery

Make sure you have two fully charged batteries which came with your KTX-PC.

0.4 RobovieMaker2

We will use a software called “RobovieMaker2” to program the servo controller board, VSRC003, on KTX-PC. Make sure that you get current version of RM2, currently version 9 and 10 supports KTX-PC. You can find detailed instruction for the installation in RobovieMaker2 User Manual.

1 Download Robot Project file

Place the Project file in your workspace directory and unzip the file. Then, copy the unzipped robot project files into your working directory for this lesson.

Following is example of workspace folder structure.

```
My Document + KTX + KTX-PC + PICO820 + Drivers
    +           +           + Manuals
    +           +
    +           + Manuals
    +           + RobotProject
    +           + Tutorials + Lesson1 + RobotProject
    +                   + Lesson2
    +                   + Lesson3
    +
    + RobovieMaker2 Ver10
```

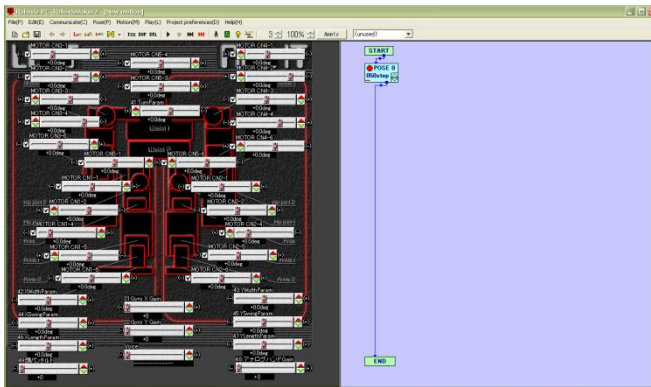
2 Connecting Robot to your PC

2.1 Connect Mini USB Cable

Connect mini USB cable came with your KTX-PC to the servo controller. You can find the connector next left shoulder of the robot. Then connect the other side of the cable to your PC's USB port.

2.2 Open Robot Project File

Go to your workspace folder where the robot project files are stored and double click the file named "Robovie-PC.rpj". RobovieMaker2 will automatically start and it will open the robot project file. You will see the following window application on your display.

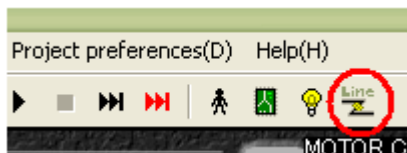


If it asks for creating new project file, select "No".

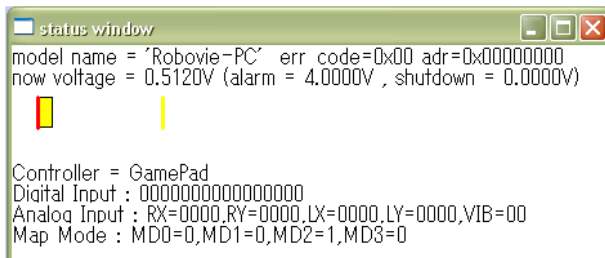
<|> Make sure that your sample robot project file is unzipped. If not, then it will generate project initializing error.

2.3 Establish Connection

By pressing "Line" button, you can establish a connection to the servo control board.



If it's successful, "status window" will show up and tell you about current status of the control board.

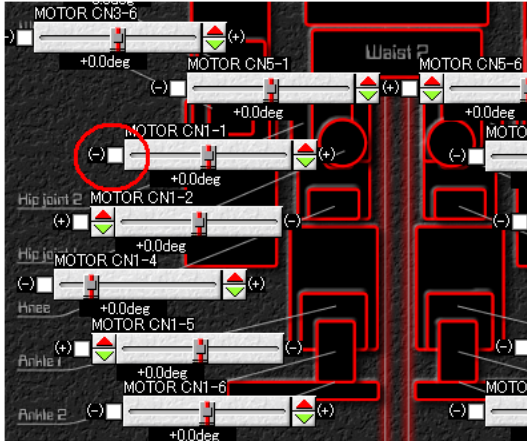


3 Initial Position Setup

Before running motion files, you have to configure the robot for initial position. This part briefly explains the setup. Please look at the RM3 User Manual for detailed instruction.

3.1 Un-check the all checkboxes next to the sliders

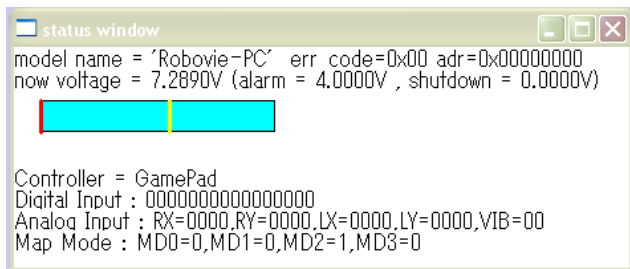
Un-checking the checkbox will disable control from the software.



3.2 Connecting Batteries

Connect fully charged batteries to your Robot. Make sure that the PC power switch is off (toward inside is off), then turn on ("- " sign is ON) the power button on your robot.

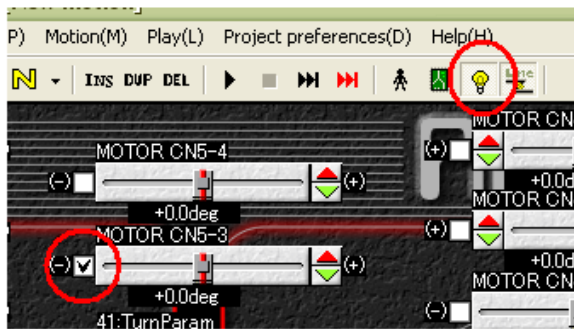
The status window will show the blue bar which indicates your voltage applied to your control board.



3.3 Set initial position

3.3.1 Activate servo motor

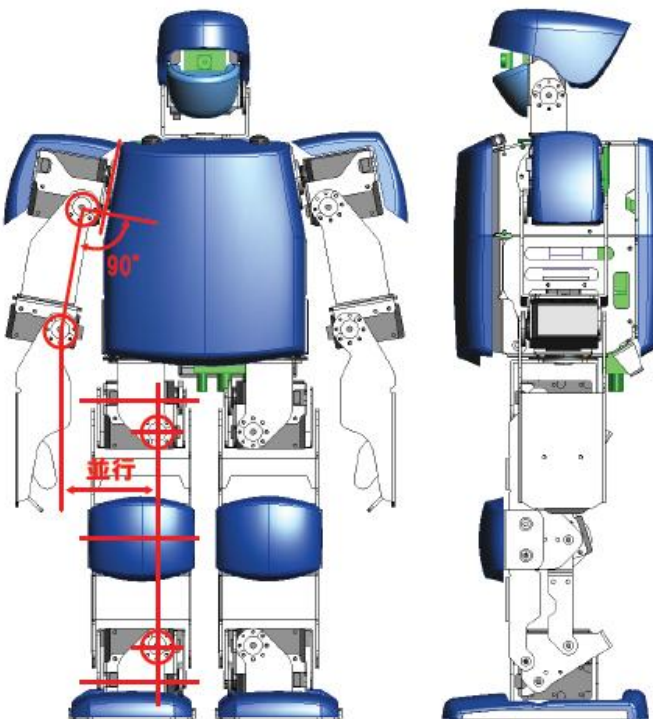
Activate one of the slider (try “MOTOR CN5-3” or “MOTOR CN5-4”) by checking the checkbox. Then click on the power button.



it will power up one of your servo motor. Try moving the slider you activated, it will move the servo motor.

3.3.2 Set the servo motor to its initial position

Set the servo motor position to the initial position by clicking “up” and “down” button on the slider. The initial position is described in following picture.



3.3.3 Deactivate the servo

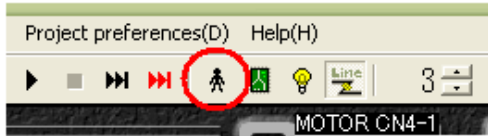
Deactivate the servo by un-checking the checkbox you activated.

3.3.4 Do step 3.3.1 to 3.3.3 for all the servo motors

3.4 Loading the initial position to the Control board

3.4.1 Calibrate

Press “Calibrate” button and load the position to the control board.

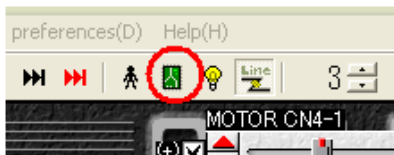


If it asks for confirmation, select “yes” and “ok”.

<|> Make sure to hold the robot while sending the data. The robot might lose its power while the transferring the data.

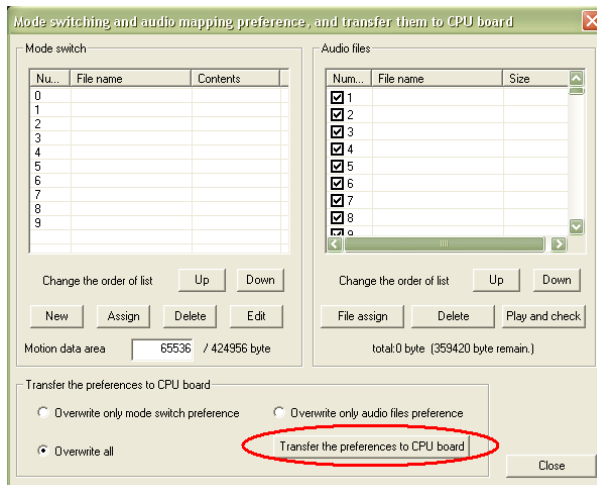
3.4.2 Transfer

Then press “Transfer” button to transfer the data to the control board.



It will opens up a window.

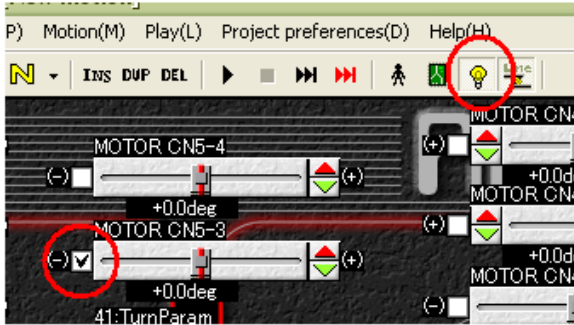
Click on “Transfer the preference to CPU”. If it asks confirmation, select “yes” or “ok”.



<|> Make sure to hold the robot while sending the data. The robot might lose its power while the transferring the data.

3.5 Turn off the servo motors

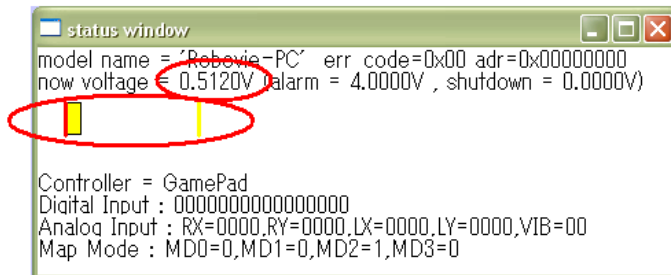
Now your Robot is ready for programming. While programming your robot, it's better to keep your servo motors turned off. Please turn off the servo motors by releasing power button on the software.



If the servo motors does not power off, you might not have connection to the control board properly. Try connecting the board again and press power button, then release the power button.

Make sure all the servo is powered off and turn off the power ("o" sign indicates off) switch on the robot.

You can check on the status bar to make sure the power is not applied to the board any more.



4 Loading Motion File onto Robot

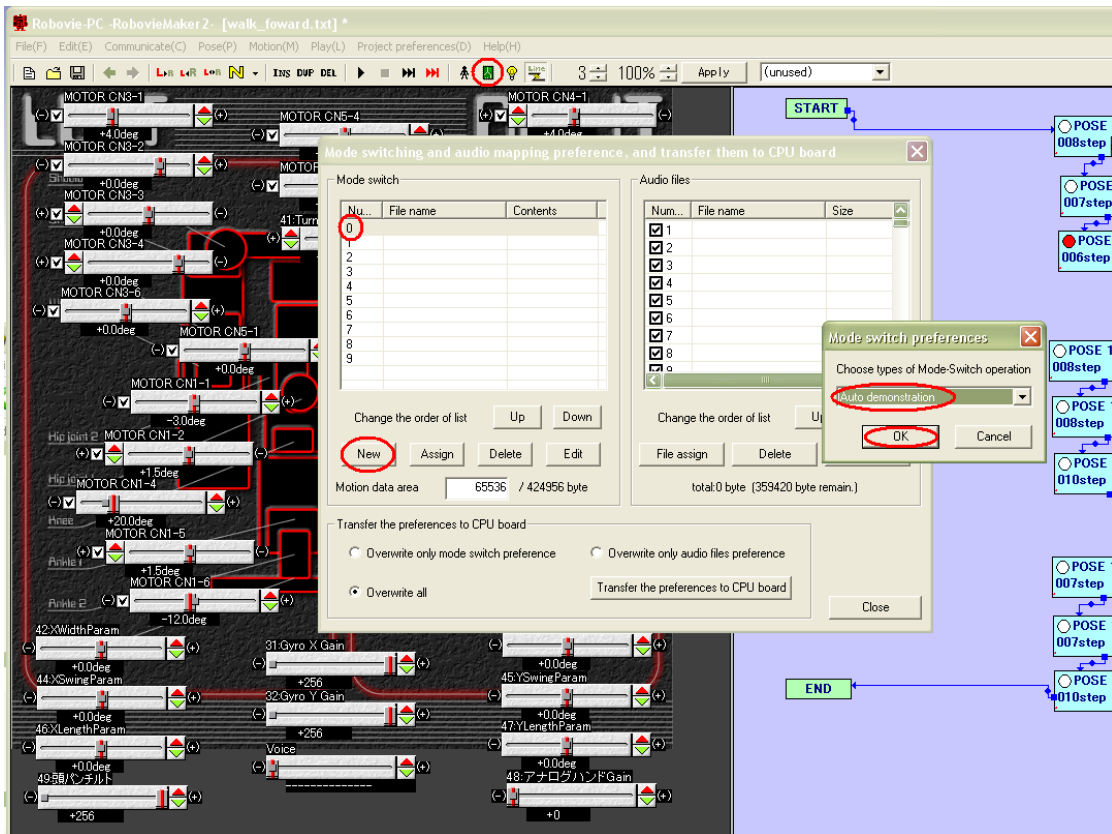
4.1 Auto Demonstration

4.1.1 Create new Auto Demonstration

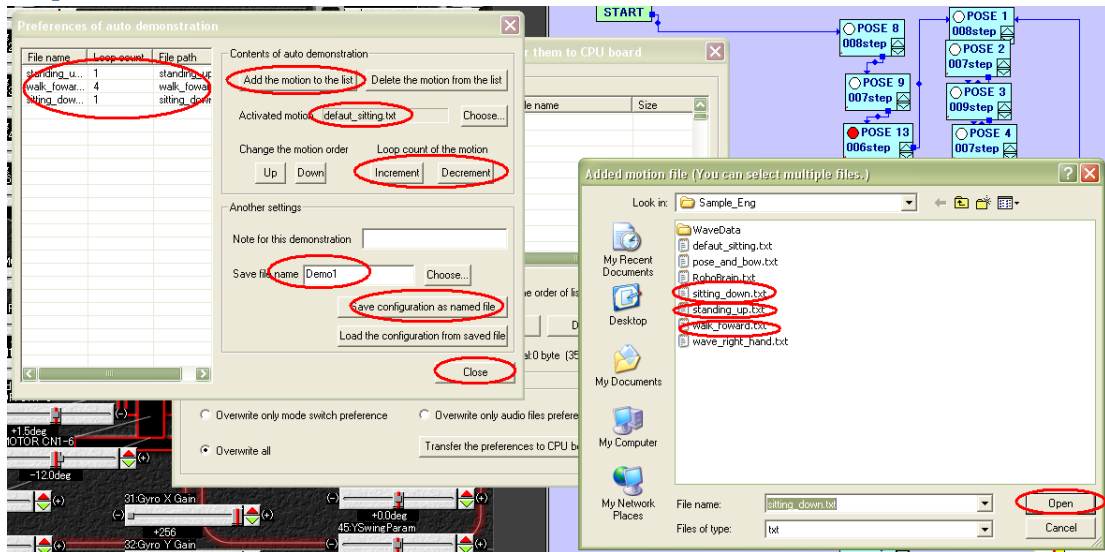
Press “Transfer” button, it will open up a data transfer window.

Then select Mode switch “Zero” and click “New” button.

It will ask for Mode switch preference, select “Auto demonstration” then press “OK”.

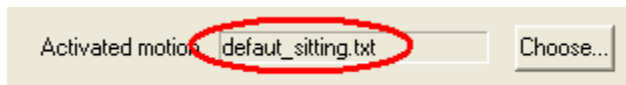


4.1.2 Set preferences of Auto demonstration

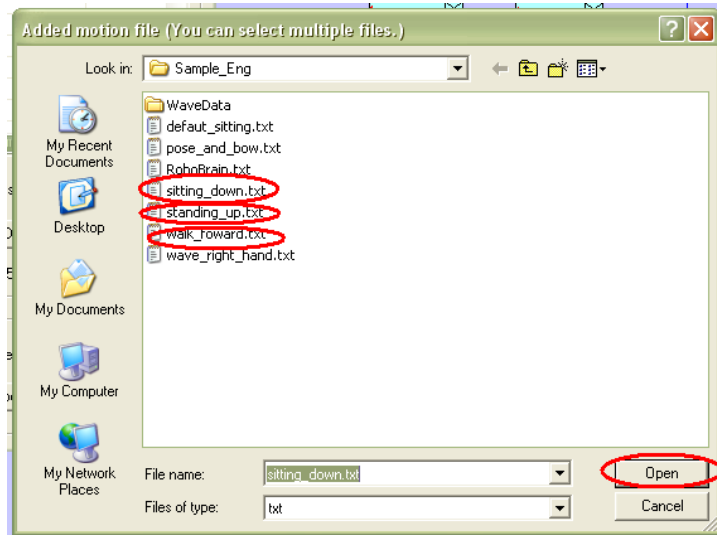


4.1.3 Activated Motion

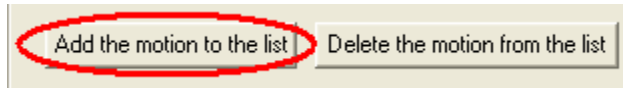
Activated motion is always executed prior to the auto demonstrations so that the robot does not start from unknown state of the position. Select "default_sitting.txt" as activated motion.



4.1.4 Add Motions



Add a motion called "standing_up.txt" by clicking on "Add the motion to the list" button. Because we selected default "sitting.txt" as an activated motion, the robot will start from the "sitting down" pose. Therefore, we chose a motion "standing up" for the 1st motion to be executed.



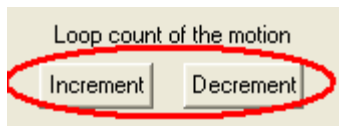
Now we can add a motion "walk_foward.txt".

Last motion to add will be the motion "sitting_down.txt". We assign this motion at the end of demonstration so that we can turn off the power after the demonstration without holding the robot.

4.1.5 Set Motion Loop

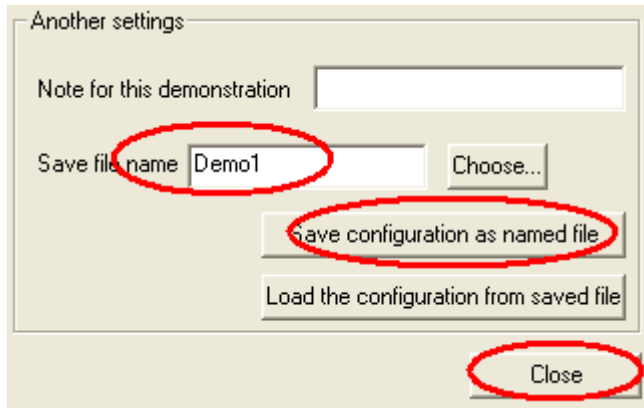
File name	Loop count	File path
standing_u...	1	standing_up
walk_foward...	4	walk_foward
sitting_down...	1	sitting_down

Set the number of motion loop of "warlk_forward.txt" to "4" by clicking "Increment" or "Decrement" button.



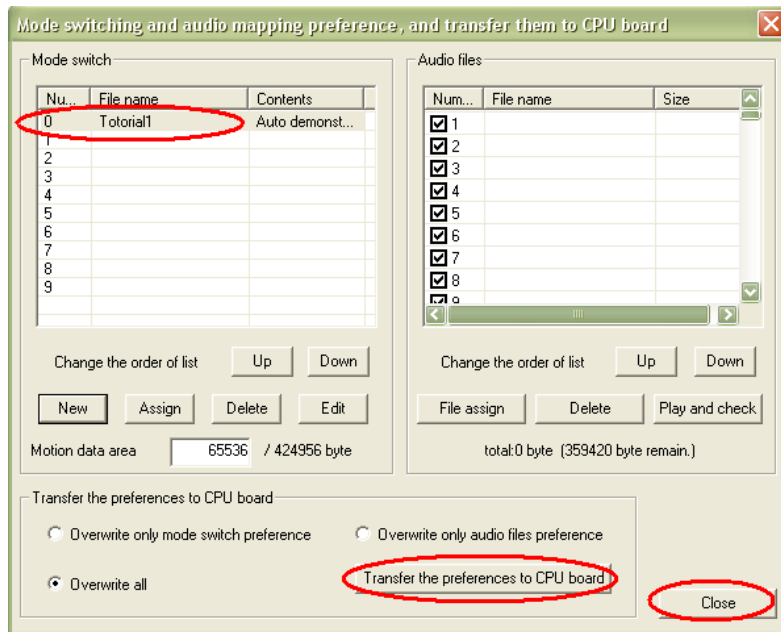
4 means that the robot moves 4 steps forward in this motion file.

4.1.6 Set File name and save the auto demonstration



Enter file name and save it. Then press "close" button.

4.1.7 Transfer the auto demonstration



Make sure that the created demonstration appears on the window.
Press “transfer” button and close the window.

4.2 Let's Play the Auto Demonstration!

4.2.1 Power up the robot

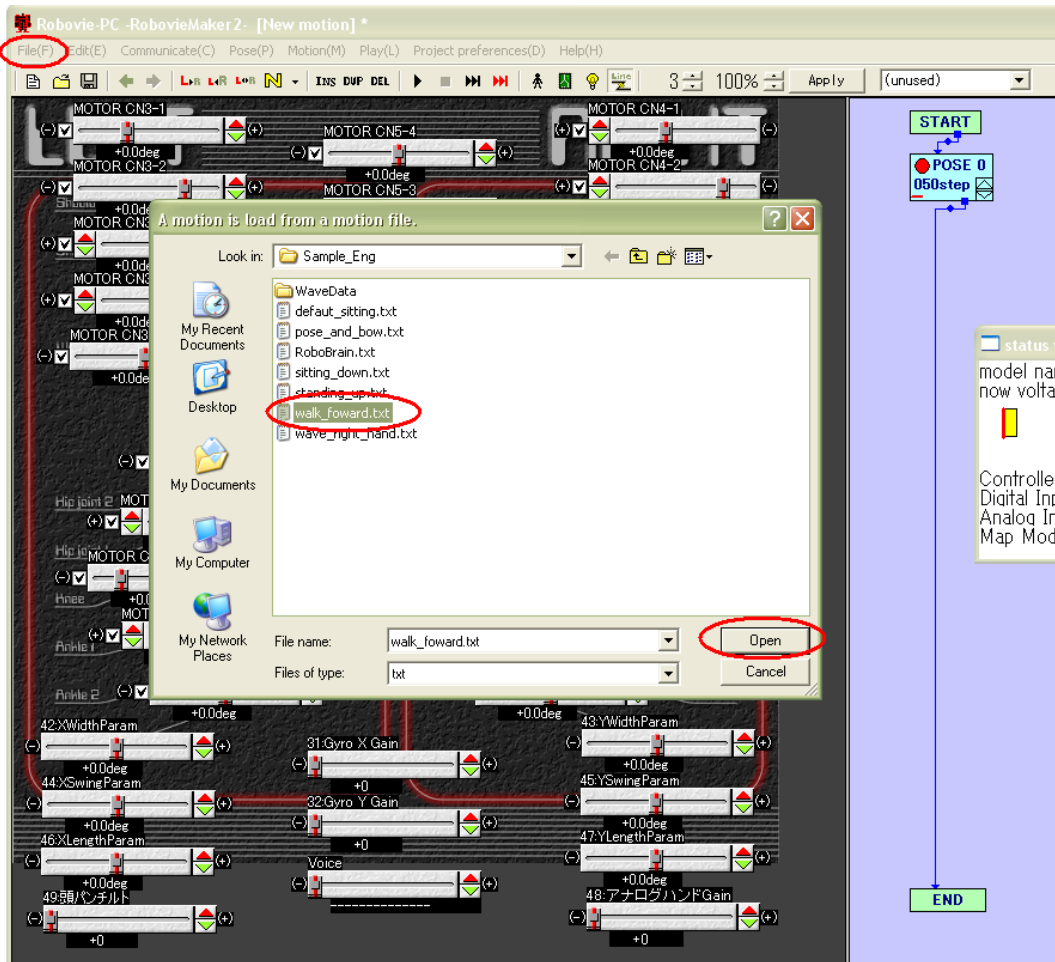
Turn on the power switch on your robot, and press “reset” button on the servo control board.

The robot will stand up and start walking 4 steps forward, then sits down.

5 Extras

5.1 Open existing motion file

Go to “file” on menu tab of RM2 and select “open”. It will ask for the file to open, go to your workspace where copied SampleRobotProject is and select “walk_forward.txt”.



When you modifying a motion file, make sure save your original before start modifying.