CS684

Team 2 : Kinect based remote control of harvesting bot (Autumn 2012)

Software Manual

Client : System at remote location
Server : System in greenhouse

1. Installations

1. Download Microsoft Kinect SDK (beta) for Windows from here: http://www.microsoft.com/en-us/download/details.aspx?id=27876 and install the SDK (default installation options work fine) on client system.
2. Next download Microsoft Visual Studio 2010 from http://msstore.iitb.ac.in/index.php and install it (default installation options work fine) on client and server both.
3. Install AVR studio 4.17 and AVR bootloader on server.
4. Install X-CTU on any system to configure X-bee (detail in hardware manual)
5. Install IPCam Admin Utility for configuring IP camera (detail in hardware manual)

2. Connections and Settings :

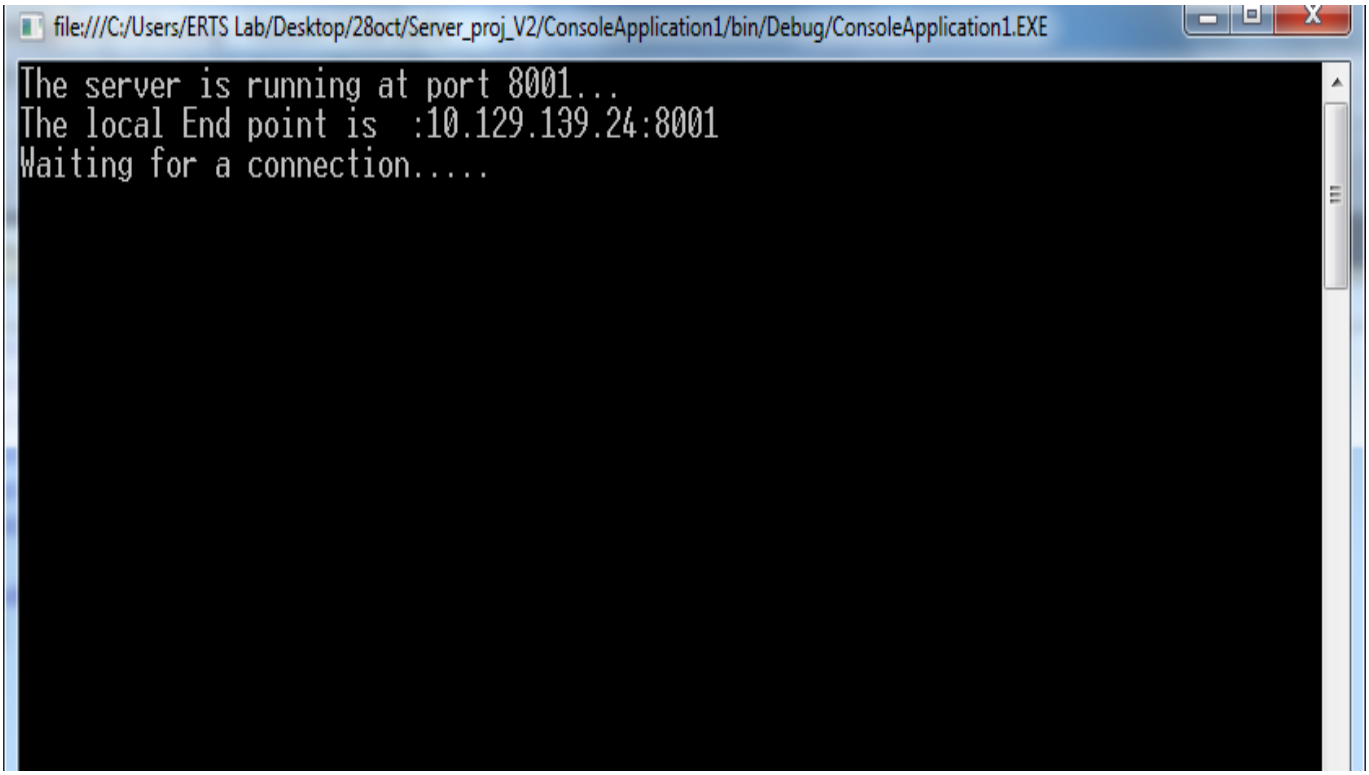
- Connect X-bee with server system
- Connect kinect with client system
- Mount the IP camera at appropriate location to get a clear view of greenhouse
- Place the trough on the arena at boundary given for troughs
- Connect server and client via Internet and assign server IP (IP used :10.129.139.24)
- Turn on adhoc network on client, if IPCam in wireless mode is needed to be used. This is not required, if IPCam is connected via LAN (IP used for camera : 10.129.139.3)

3. After installation and proper connections :

1. Burn the firebird code “Serial_Communication_ZigBee_wireless.hex” (in folder firebird/ Serial_Communication_ZigBee_wireless/ default) on bot using AVR bootloader

2. On server system, open “ConsoleApplication1.sln” (in folder server_project/) file in visual studio.

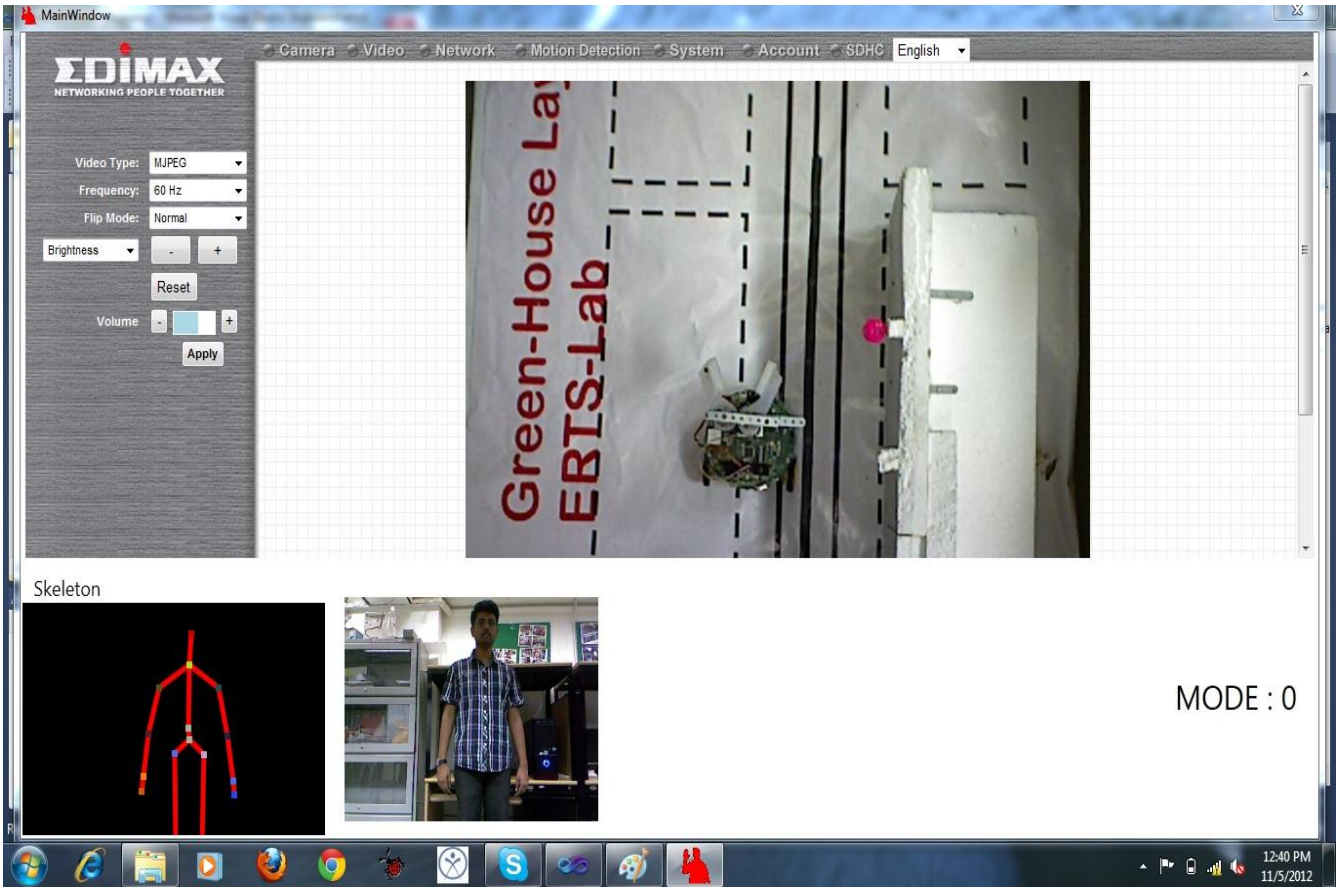
3. Rebuilt it using “Build solution” option and then run it. It should open the following GUI, (if there are no errors) :



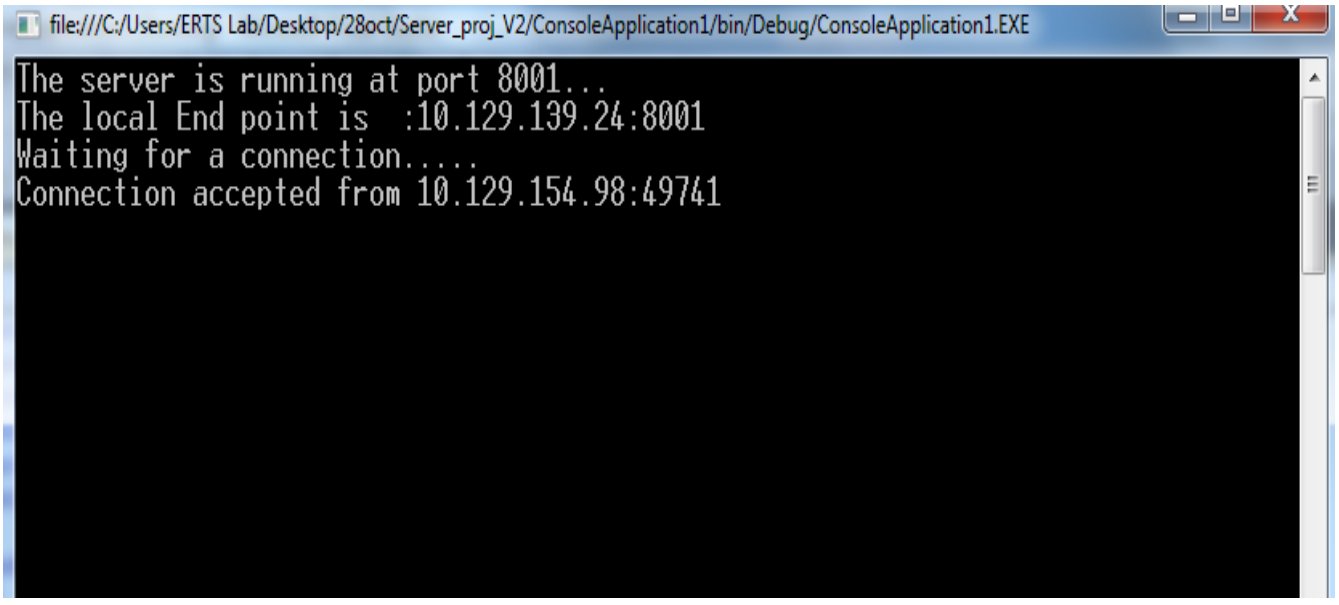
It is waiting for connection from client.

4. On client system, open “SkeletalViewer.sln” (in folder client_project/kinect/) file in visual studio.

5. Rebuilt it using “Build solution” option and then run it. It should open the following GUI, (if there are no errors) :



As soon as client application runs, server will show connection accepted message as shown below :



So now both server and client are ready. According to the gestures given by greenhouse owner at remote end (client GUI), bot located in greenhouse perform the harvesting task.