Task 3.2 - Building the Remote Control

In this task you are required to construct the Remote control for the Medbot to control the DC Geared Motors and other components like Buzzer, Electromagnet module via wireless XBee communication.

You are required to do the following in this task:

1. Construct a **test setup** consisting of the following components:
   a) Arduino Mega
   b) Xbee (with Adapter)
   c) L298N Motor Driver
   d) DC Geared Motors
   e) IRF540N Mosfet
   f) Electromagnet Module

You are required to interface the above components with the Arduino Mega using the following block diagram as reference:

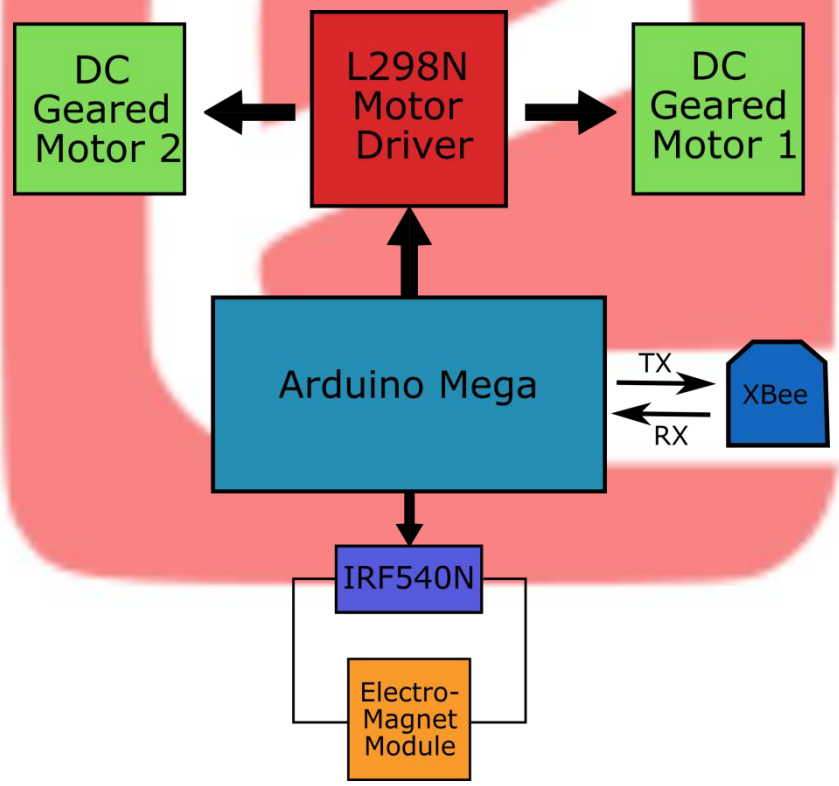

Figure 1: Block Diagram

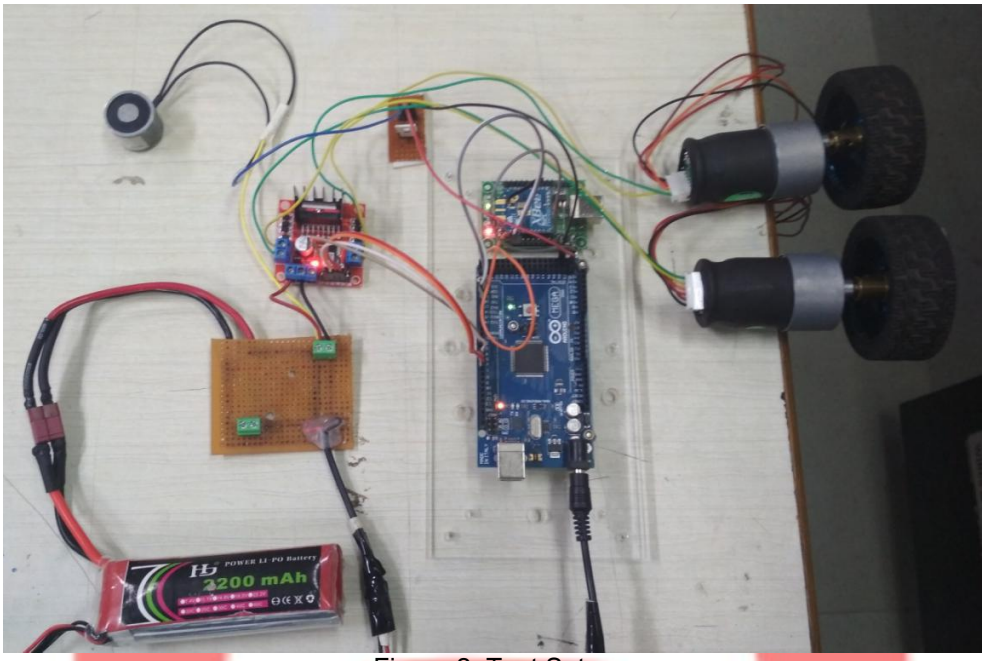

Figure 2: Test Setup

2. Construct a remote control consisting of the following components:
   a) Joystick Module(s)
   b) Xbee (with Adapter)
   c) Toggle Switch (not included in robotic kit)

The block diagram is given as reference:

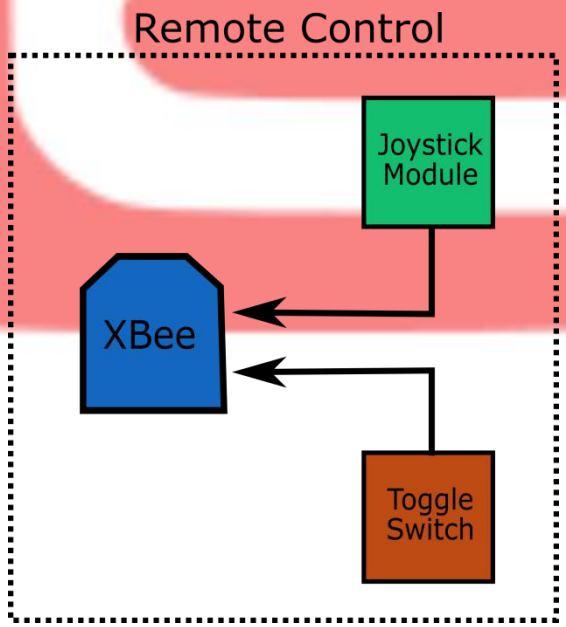

Figure 3: Block Diagram

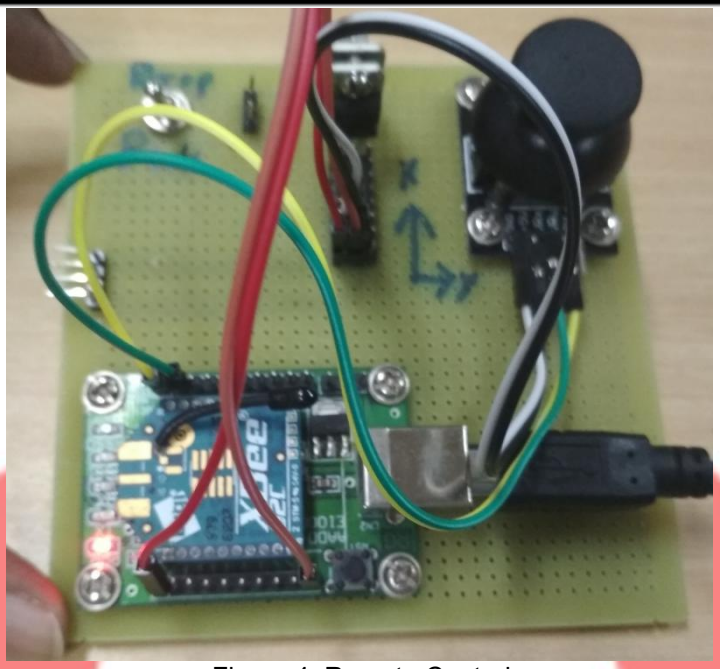

Figure 4: Remote Control

You have to interface the Xbee with the Joystick Module and the Toggle switch and retrieve the analog and digital values that are transmitted to the XBee module.

3. Control the DC Geared Motors and Electromagnet using the Remote as per the given example **video**.

   In order to implement this, you are required to do the following.
   a) Configure the XBee Modules in API Mode in order to transmit analog and digital sensor information from one Xbee to another. This is done using XCTU.
   b) Extract the API Data frames from Receiver XBee (the one mounted on the test setup).
   c) Based on the values received in the API Data frames, actuate the DC Motors and the Electromagnet.
   d) You need to write code in Arduino IDE and program the Arduino to do (b) and (c).

Note: The remote control given in Figure 4 is only for reference purposes. You are free to design your own remote controller any way you like. You can use 2 joysticks and multiple toggle switches to control buzzer and RGB LED as well. The only condition is that all the components must be interfaced with the XBee module.