# Google Android Smart phone operated Motor Control System

The project aims in designing a system which makes controlling the speed and direction of a motor through Google Android smart phone possible. The controlling of motor is done wirelessly through Android smart phone using the Bluetooth feature present in it. Here in the project the Android smart phone is used as a remote control for operating the speed and direction of the motor.

Android is a software stack for mobile devices that includes an operating system, middleware and key applications. Android boasts a healthy array of connectivity options, including Wi-Fi, Bluetooth, and wireless data over a cellular connection (for example, GPRS, EDGE (Enhanced Data rates for GSM Evolution), and 3G). Android provides access to a wide range of useful libraries and tools that can be used to build rich applications. In addition, Android includes a full set of tools that have been built from the ground up alongside the platform providing developers with high productivity and deep insight into their applications.

Bluetooth is an open standard specification for a radio frequency (RF)-based, short-range connectivity technology that promises to change the face of computing and wireless communication. It is designed to be an inexpensive, wireless networking system for all classes of portable devices, such as laptops, PDAs (personal digital assistants), and mobile phones. It also will enable wireless connections for desktop computers, making connections between monitors, printers, keyboards, and the CPU cable-free.

The controlling device of the whole system is a Microcontroller. Bluetooth module, DC motor, contact less speed sensor and LCD display are interfaced to the Microcontroller. The data received by the Bluetooth module from Android smart phone is fed as input to the controller. The controller acts accordingly on the DC motor speed and direction. Also, the speed and direction of the motor can be seen on LCD display. In achieving the task the controller is loaded with a program written using Embedded 'C' language.

**The main objectives of the project are:**

1. Controlling of a motor wirelessly through mobile phone.
2. Usage of Android touchscreen smart phone in performing the task.
3. Bluetooth wireless transmission.
4. Display of motor speed and direction on graphical display.

**The project provides exposure to following technologies:**

1. Google's Android open source technology.
2. Bluetooth wireless technology.
3. Interfacing Bluetooth module to Microcontroller.
4. DC motor working principle and need for motor driver.
5. Embedded C programming.
6. PCB designing.

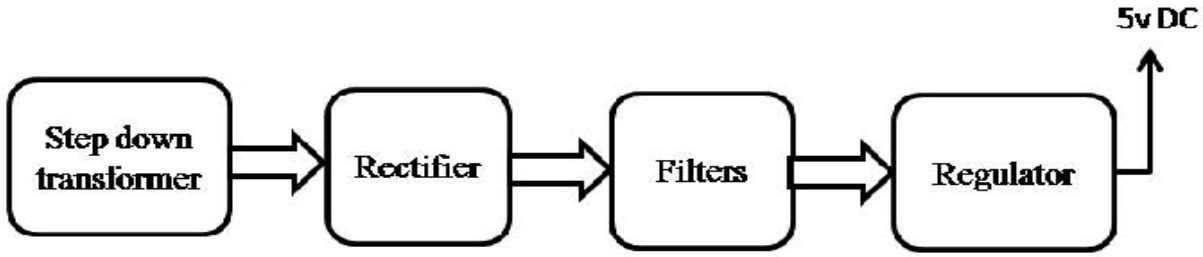
**The major building blocks of the project are:**

1. Regulated Power Supply.
2. Microcontroller.
3. Android smart phone.
4. Bluetooth module.
5. DC motor with driver.
6. LCD display with driver.
7. Crystal oscillator.
8. Reset.
9. LED indicators.

**Software's used:**

1. PIC-C compiler for Embedded C programming.
2. PIC kit 2 programmer for dumping code into Micro controller.
3. Express SCH for Circuit design.
4. Proteus for hardware simulation.

**Regulated Power Supply:**



**Block diagram:**