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Design and Development of Wireless Four Wheeled BOT Using Labview

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Abstract

The need of a wireless driverless car is a prime need of various fields such as Spaceship programs, maintenance of Hazardous materials, crime spots etc. LabVIEW is a versatile tool which is also used for the design and creation of such applications in a marvelous way. It contains pallets which are represented in a graphical way to do the necessary programming. Now in this modern technology phase, LabVIEW is equipped with much more facilities to incorporate the association and synchronizations with hardware devices. In this paper, the procedure to build the wireless bot is discussed for enhancement of ideas for more robust assignments using RF module interfacing with LabVIEW. The advantage and easiness of Software is to use dedicated firmware for associations.

Keywords: LabVIEW, Wireless BOT, Hardware interfacing

Introduction

With advancement in technology, the graphical programing is also popular among various research communities for their simplexes and well as well-defined and adaptive options for different tasks. In LabVIEW, the graphical pallets are designed for different application and tasks which helps a research from any domain to do certain analysis of data based on their acquisition and real time processing capabilities [1]. After JAVA and C++ based textual programming tools, the research community was not able to adopt them for their day to day tasks and levels. As Internet of things is an emerging field, the graphical pallets for this task is also provided in the package for creating such applications for user facilitation. The Figure 1 shows the concept and logic behind the development of this task [2].

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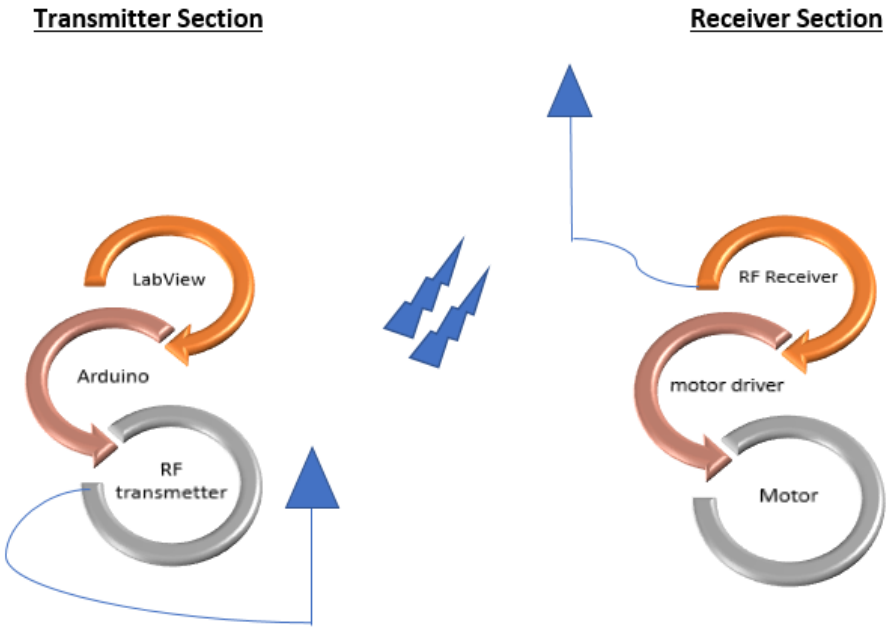

Figure 1: Development of wires less BOT using transmission and receiving RF signals

In this application, from the Laptop the control signal is generated and on the other side the module receives the signal for processing of different commands [3,4,5].

Methodology and components requirement:

The list of components required for the project is given in Table 1.

Table 1: Component requirement for the Project

Sr. No.	Components /software	Quantity
1	LabView 2019	Nill
2	Arduino UNO	1
3	R F module	1
4	12 E -IC	1
5	12 D -IC	1
6	7404 -IC	1

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7	DC gear Motor	4
8	Antenna	2
9	Battery 5V	1
10	Battery 12V	1
11	BOT chases	1

The LabVIEW 2019 is the best tool for design for the application. It is a licensed ware for assessing of options. The front and block panel of software is shown in figure 2.

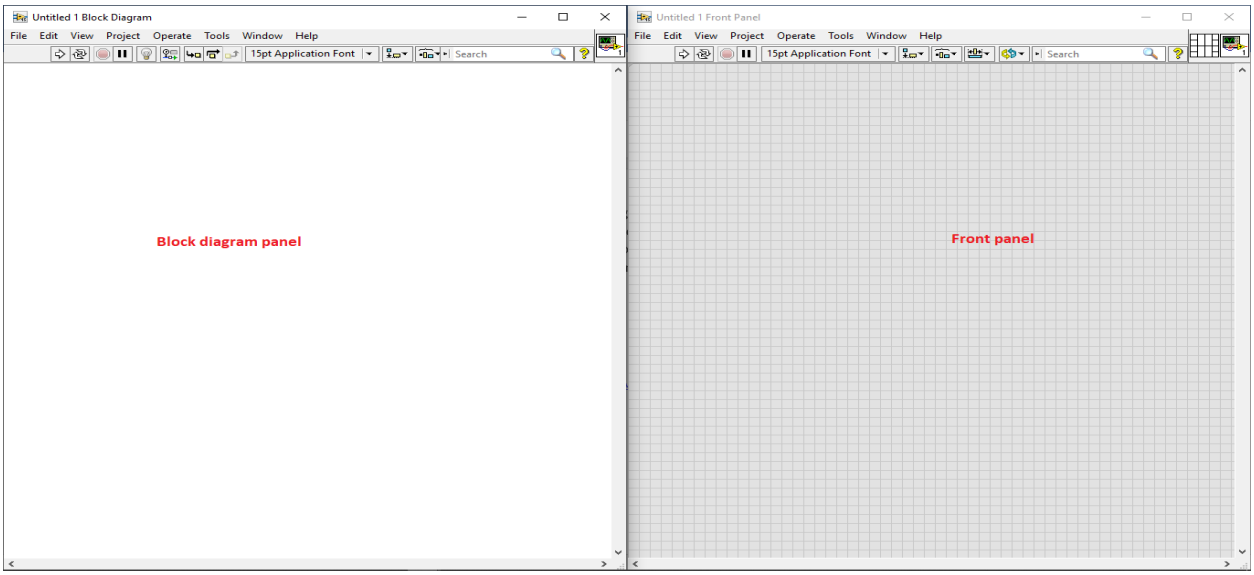

Figure 2: Front and Block diagram of LabVIEW 2019.

Arduino UNO board is the best controller for interfacing of RF module with Wireless BOT [6].

The board used in shown in Figure 3.

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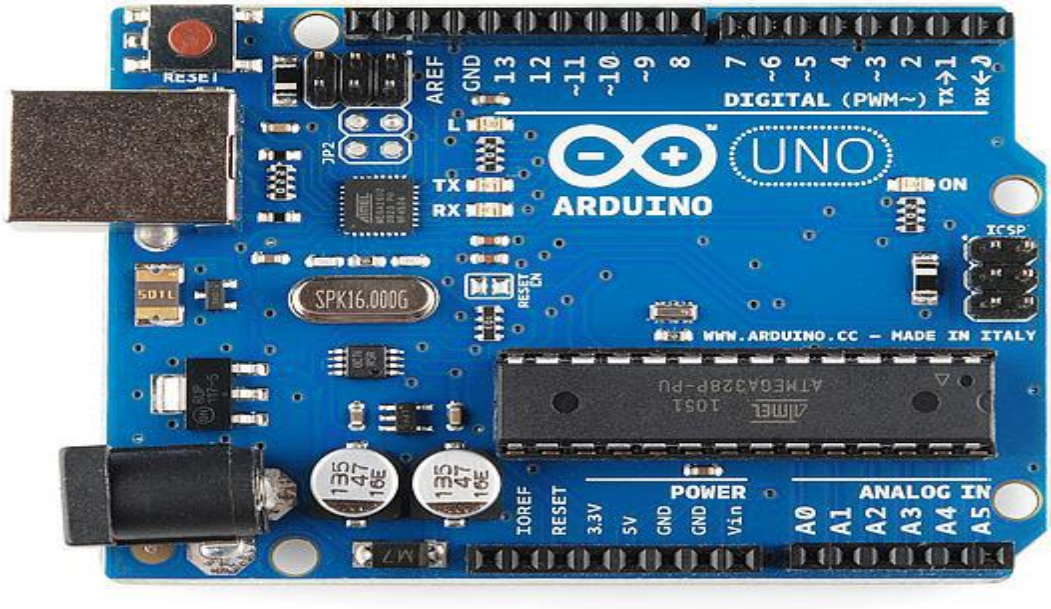

Figure 3: Arduino UNO Board for establishment of Interfacing

The Radio frequency module is also shown in figure 4.

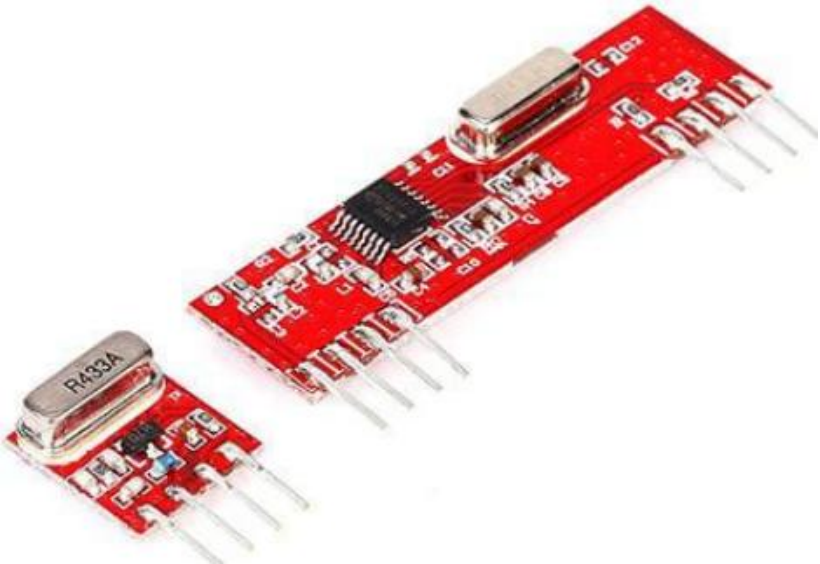

Figure 4: RF chip module for wireless interfacing and class protocol.

Results and Discussion

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The idea for design of such application is shown in Figure 5 6 and 7. First Install LabVIEW and then install NI VISA for serial port communication. After that, VI package manager is installed for downloading of DIGILANT firmware for communication protocols in Main software [7].

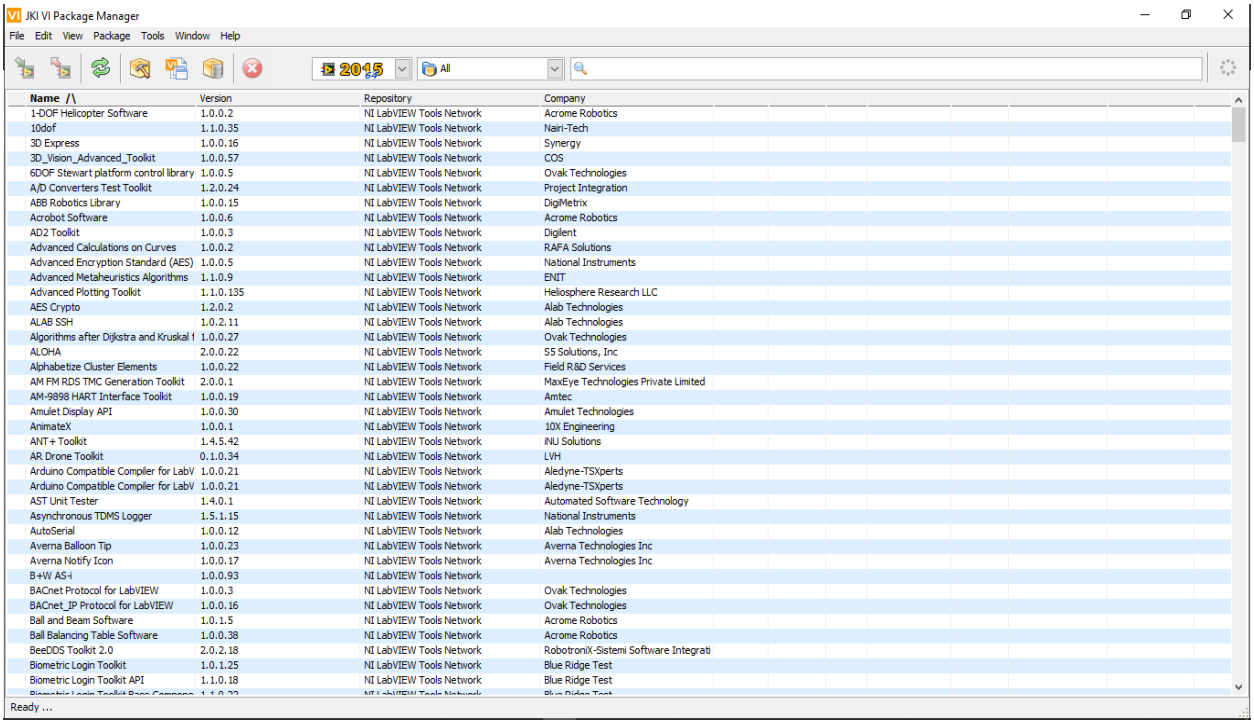

Figure 5: NI Package manager for firmware patching

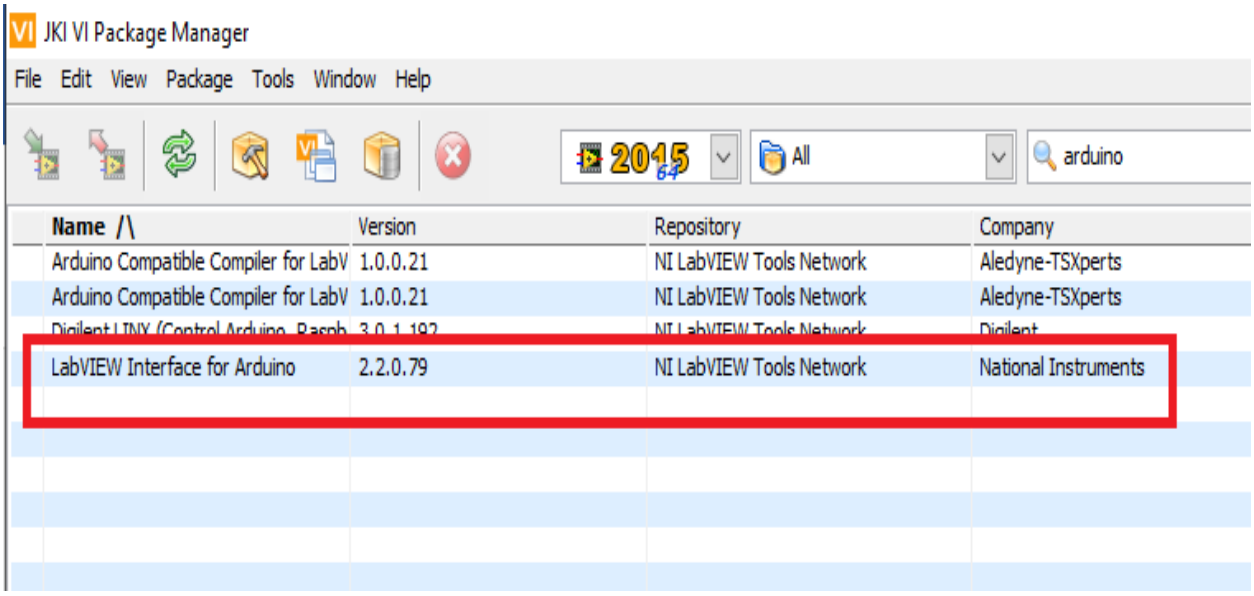

Figure 6: Downloading of interfacing module for Arduino board

The logic behind the system design is given below:

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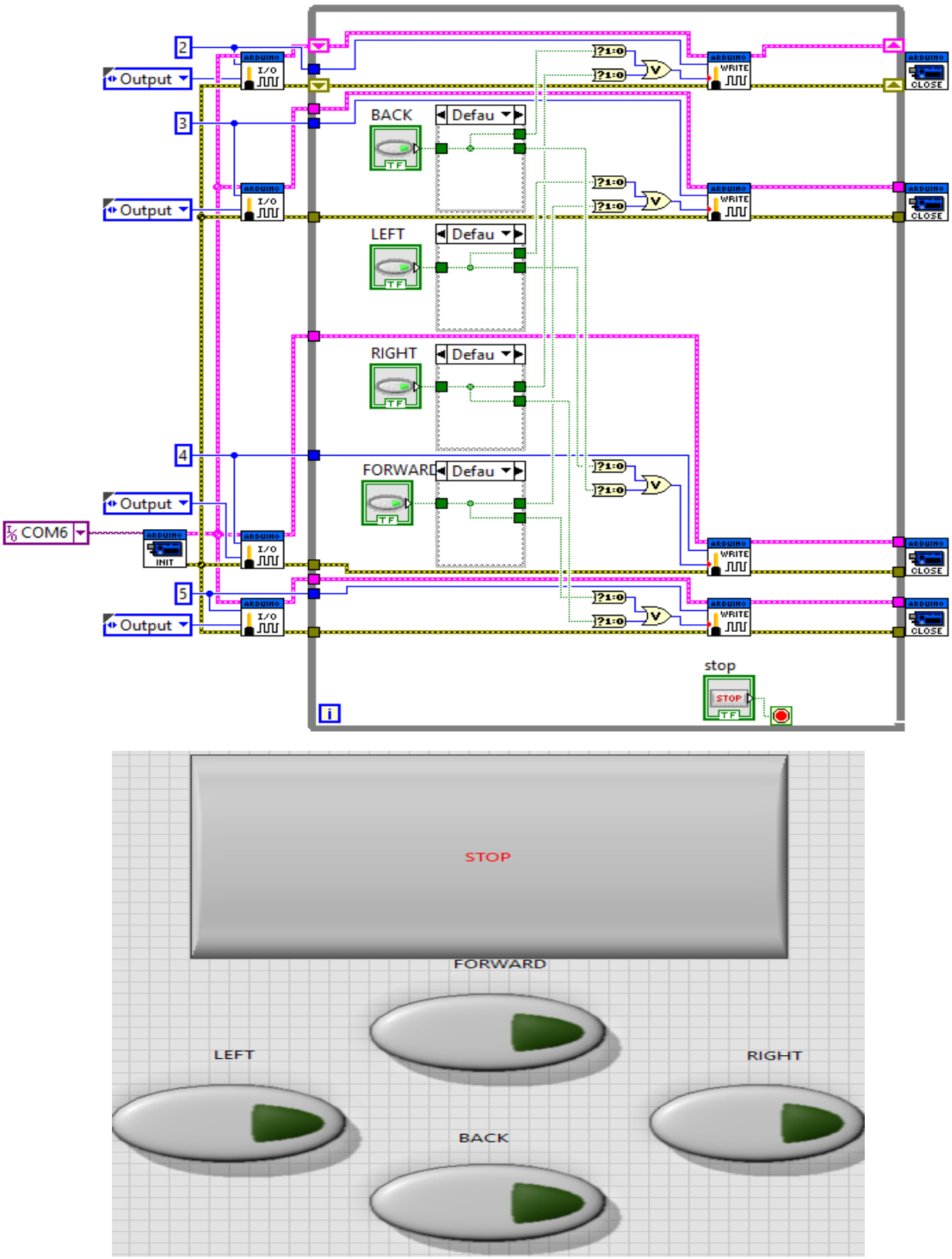

Figure 7: Development of VI for wires connection with associated modules.

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The design of this application is developed by connecting a serial port with threads to file number and place of com port. The data read option is asking for data type and reference pallets such as channel number and his baud rate. Then a digital read is used for accumulation of command dangles for accommodating his role for driving the motor via optical interface. The analog pallets are used for reading of relative motion of such motors using optical encoders. The optical encoder is a portable device for counting movement pulses. The pulses are counted for relative feedback in motion of BOT. The relative bot is engaged in data transfer via Bluetooth model for all dimensional control in same as well as four dimensions. The Boolean option is accommodated for serving the decision in this BOT [8]. The bot can be run in any direction with the help of four buttons in front panel and their relative motion is defined by their pressing in options. So, this is the best way to control the allocation for motion and pickup purpose [9,10].

Conclusion: By using Maker hub pallets the application was designed for IOT based charms. In future such ideas will further be implemented to modify more advanced research in BOT designs with artificial intelligence for smart decisions.

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