

# Speed Control of Induction Motor using Android

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**Abstract:** *Speed control of induction motors using Android devices is an innovative and convenient way to manage and adjust the speed of these widely used electric motors. Induction motors are essential components in various industrial and residential applications, such as fans, pumps, conveyor belts, and many more. Controlling their speed efficiently can lead to energy savings, process optimization, and improved overall performance. In this context, Android-based speed control systems offer several advantages, including user-friendly interfaces, remote accessibility, and the ability to integrate with other smart systems. This introduction will provide an overview of the concept and benefits of speed control of induction motors using Android.*

**Keywords:** Arduino, Speed.

## I. INTRODUCTION

Speed control of induction motors using Android involves integrating a mobile application with a control system that manages the speed of an induction motor. This integration allows users to control and monitor the motor's speed remotely through an Android device. Induction motors are widely used in various industrial and commercial applications due to their reliability and efficiency. These motors operate based on electromagnetic induction principles. Induction motor speed can be controlled using various methods, and one common approach is using a Variable Frequency Drive (VFD). VFDs adjust the frequency and voltage of the power supplied to the motor, thereby controlling its speed. A microcontroller or a Programmable Logic Controller (PLC) is employed as an intermediary between the Android device and the motor control system. It interprets commands from the Android app and adjusts the motor's operating parameter

## II. LITERATURE SURVEY

Literature review. Ijsrd international journal for scientific research development vol. 2, issue 08 speed control technique for induction motor.

Induction motor with fuzzy controller a review. Siva ganesh malla and jagan mohana rao malla international journal of emerging trends in electrical. Automatic muimode smart charger with power supply control to. Speed control of dc motor. international journal on recent and innovation trends in computing and communication issn 2321 8169. Control of three phase induction motor. international journal on recent and innovation trends in computing and communication issn 2321 8169.

8. 8 chapter 2 literature review. Literature review paper on doubly fed induction generator wind turbine technology pdf download available . Speed control technique for induction motor a review. If instead, bridge converters are utilized, 4. a survey. This frequency is regularly 2. a survey.

Design of xnor gate using set based linear threshold gate. Plc application for speed control of induction motors through vfd. equivalent electric model of the junction recombination velocity. Parametric study on the model of linear antenna arrays for cosecant. Control of three phase motor 27. 4. 4 abstract induction motors. Speed single phase induction motor using vector control 8. Literature review on variable frequency drive for induction motor. ch 4 ac. Plc and fuzzy logic control of a variable frequency drive.

Of electrical engineering, gecj 2. Simulation of speed control of single phase induction motor is carried out in two different control techniques are shown below. 7270817 ac motor speed control. Ch 10 aernators and inverters. Power

quality disturbance effects in relation to 60. Weg induction motors fed by pwm frequency converters technical guide 028 technical article english. Mui level inverter a literature survey on.

The chopper circuit is feed by a sinusoidal supply directly from the mains at 50 hz, without a preliminary ac dc conversion. the main working principle of. Remote induction motor control by android application with 7 segment display\_kit.

... ac speed control motor in a block diagram. figure 9. Here these switches will control the inputvoage to the motor, which in turn controls the speed of the motor. the resuant waveform of speed is as shown. Modeling and simulation of sine pwm vsi fed induction motor drives. Ieee paper template in a4 v1 . Monitoring and control of a variable frequency drive.

Novel 5 level cascaded h bridge muilevel inverter topology abhishekthakur , rejoyroy , t.v.dixit. Induction motor modeling and applications dept of electrical and electronics 1 chapter 1 1. Robust speed control of a doubly fed induction motor using state space nonlinear approach leonardo j sci 2013, 22, 103 120

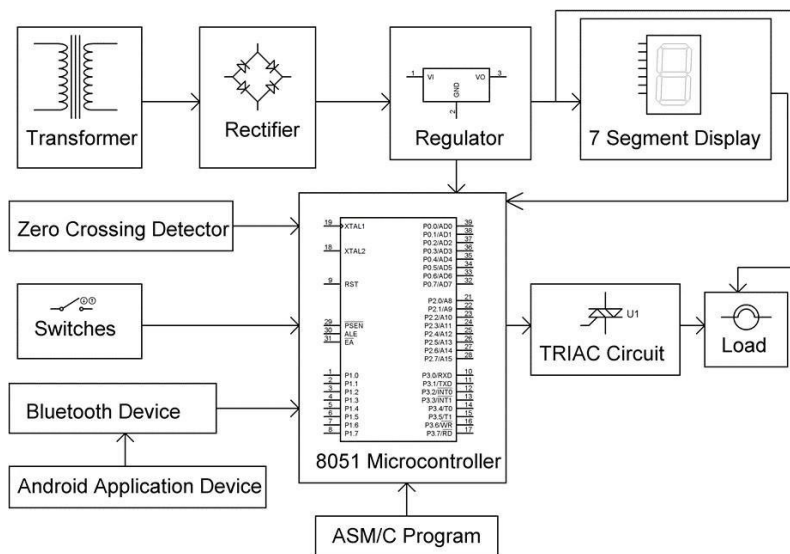
**Problem Definition:**

The problem definition for the speed control of an induction motor using Android typically outlines the challenges or objectives that the research or project aims to address. The conventional methods of controlling the speed of induction motors often involve complex hardware interfaces and limited mobility for operators. There is a growing demand for more flexible and user-friendly control solutions that can harness the power of mobile technology. The objective of this study/project is to design, implement, and evaluate a system for the speed control of an induction motor using an Android interface. It develops a seamless integration between an Android application and the induction motor control system. The interface should allow users to intuitively set and adjust the motor speed using common Android devices. It also defines a reliable and efficient communication protocol between the Android app and the motor control system. The protocol should ensure real-time responsiveness and data accuracy. Implement a control system that enables real-time adjustments to the motor speed based on user input from the Android app. Evaluate the system's responsiveness and accuracy in maintaining the desired speed

**Objective:**

The main objective of the project is to control the speed of induction motor from a certain distance either long or short according to the range of the Bluetooth interfaced Android.

**III. BLOCK DIAGRAM**



**Proposed Methodology of solving Identified Problem:**

Speed control of induction motors using Android involves integrating a mobile application with a control system that manages the speed of an induction motor. This integration allows users to control and monitor the motor's speed remotely through an Android device. Induction motors are widely used in various industrial and commercial applications due to their reliability and efficiency. These motors operate based on electromagnetic induction principles. Induction motor speed can be controlled using various methods, and one common approach is using a Variable Frequency Drive (VFD). VFDs adjust the frequency and voltage of the power supplied to the motor, thereby controlling its speed. A microcontroller or a Programmable Logic Controller (PLC) is employed as an intermediary between the Android device and the motor control system. It interprets commands from the Android app and adjusts the motor's operating parameters accordingly.

**System components**

**a) Induction motor:**

An induction motor is a type of AC (alternating current) electric motor widely used for various applications due to its simplicity, reliability, and cost-effectiveness. Induction motors operate on the principle of electromagnetic induction. When AC voltage is applied to the stator winding (the stationary part of the motor), it produces a rotating magnetic field. This magnetic field induces a current in the rotor (the rotating part), causing it to develop its own magnetic field. The interaction of these fields generates torque, resulting in motor rotation.



**Step down transformer:**

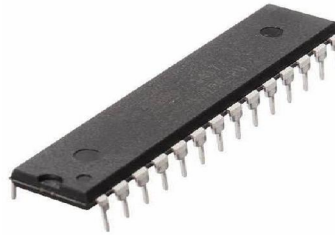
A step-down transformer is a type of transformer that reduces the voltage from its primary winding to its secondary winding. The primary winding has more turns than the secondary winding, resulting in a lower output voltage compared to the input voltage. The primary purpose of a step-down transformer is to decrease the voltage level while maintaining the same frequency. This is commonly used in electrical power distribution systems to lower the voltage for safe and efficient use in homes, businesses, and industries.



**Microcontroller unit:**

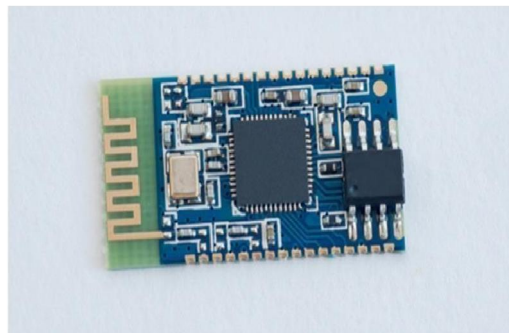
In the context of speed control of an induction motor using Android, a microcontroller unit (MCU) plays a crucial role in bridging the communication between the Android device and the motor control system. The microcontroller acts as an intermediary that facilitates communication between the Android device and the motor control system. It receives commands and data from the Android app and translates them into signals that the motor controller can understand.

The microcontroller processes the incoming signals from the Android app, extracting relevant information such as the desired motor speed. It then converts this information into control signals that can be used to adjust the motor's operating parameters.



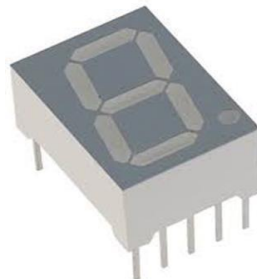
**Bluetooth device**

The Bluetooth device in the context of speed control of an induction motor using Android serves as a communication interface between the Android device (such as a smartphone or tablet) and the motor control system. Bluetooth technology enables wireless communication over short distances, making it a convenient choice for remote control applications.



**Seven segment display**

The seven segment display dates back to century old. In the year 1908 F.W. Wood invented eight segment displays which displays the digit '4' by using diagonal bar. After that in 1910 seven segment display is invented and is illuminated using incandescent bulbs. They are used in electric power plants but has gained no much reputation. Later in 1970's, with the advent of LEDs usage of seven segment display increase to a large extent.



**Benefits:**

- Fast data input operations
- Talking is much faster than typing
- Time saving

**Advantages**

1. Cost-effective.
2. The Robot is small in size, therefore less space required.
3. As we are using camera which is attached to the robot so it will capture video which will be used for security.
4. Low power consumption.
5. No accident is done by improper driving of people and also available for elderly and disabled people

**Applications:**

1. Some real-world applications of this voice-controlled car are:
2. The vehicle is useful in places where humans find difficult to reach but human voice reach. Such as in fire situations, in highly toxic areas.
3. The vehicle can be used for monitoring or investigation.
4. The voice controlled car can be easily driven by unskilled driver by using voice commands with the help of android application in smart phone.
5. Telephone assistance system.

**IV. CONCLUSION**

The proposed framework of our project shows that how a robot can be controlled utilizing Bluetooth. The voice controlling orders are effectively transmitted through Bluetooth innovation and the desired activities effectively happen. This task lessens human endeavours at spots or circumstances where human intercessions are troublesome. Such frameworks can be brought into utilization at spots, for example, businesses, military and guard, investigate purposes, and so forth.

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