IJAREEIE

e-ISSN: 2278-8875
p-ISSN: 2320-3765

International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering

Volume 12, Issue 4, April 2023

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 8.317

| e-ISSN: 2278 – 8875, p-ISSN: 2320 – 3765| www.ijareeie.com | Impact Factor: 8.317|

||Volume 12, Issue 4, April 2023||

|DOI:10.15662/IJAREEIE.2022.1204033 |

Design and Development of Medical Prescription writing using Double Axis-Controlled Robot

Mani Shankar.N[1], Jeya John Denil.A[2], Iyappan.D[3], Lawrance.J[4], Subramanian.N[5]

UG Scholar, Dept. of EEE, Francis Xavier Engineering College, Tirunelveli., India[1,2,3,4]

AP, Dept. of EEE, Francis Xavier Engineering College, Tirunelveli., India[5]

ABSTRACT: This project introduces an approach to designing a fast and fluid movement of Universal Robots to perform robotic writing that mimics the writing and trajectory of a doctor's prescription during signing. Reading a doctor's handwritten prescription is a challenge faced by most patients and some pharmacists. An issue where incorrect decoding of recipes could lead to negative consequences in some cases. One of the reasons many doctors' prescriptions are so difficult to decipher is that they use Latin abbreviations and medical terms that most people don't understand. To accomplish this task, an online standard for human signatures is first created. These standards are then used to perform a robot write task, resulting in a robot signature. Finally, we give recommendations for improving the robot's movements.

I.INTRODUCTION

With the advancement of technology in the field of robotics, robots are being researched, designed and developed for various practical purposes. Robots designed to assist people in their work and reduce human effort. Today, robots are designed to mimic human behavior and perform tasks similar to humans. Many research companies are developing robotic arms that perform basic functions like human arms. One of its features is the lighting function. The main purpose of developing the proposed system is to make it easier for people with disabilities to write their statements. The proposed mechanism is mainly for disabled persons. Currently, during exams, disabled people need scribe/scribe to write exams. I am very busy. I am working on finding the author. The proposed system will prove useful in such situations for disabled people. The proposed system consists of a microphone that receives the user's audio signal fed to the computer. The computer compares the audio signal to a database of words already stored in a library, and when it finds a match for the spoken word in the database, he sends a control signal to an Arduino-powered robotic arm to activate the servo motors. turn it on. Control. The robotic arm consists of her Arduino board with her three servo motors acting as actuators. The human arm basically moves in three axes. This human arm movement is achieved by his three servo motors moving in three different directions. The work of the robotic arm basically consists of his two parts. The first part consists of receiving audio signals and converting them to text, the other part of him uses the mechanical action of motors to obtain text.

II. LITERATURE SURVEY

TITLE: DESIGN AND DEVELOPMENT OF ARDUINO CONTROLLED WRITING ROBOT
AUTHOR: R. Balathangam [1], P. Mathipriya [2], R. Pavithra [3] G. Prithiviraj (4), U. Poornima [5] Students [1,2,3,4], Assistant Professor [5].
The main purpose of this project is to develop a writing robot to make the educational system more interesting with speech recognition technology. Basic visual software used in this system. Speech recognition was implemented using an Arduino microcontroller (ATMEGA328). It was used to control a robotic arm via servo motors based on user input. Robots are used in various industries such as medicine, science and research. Therefore, this article proposed new ideas on how to implement robots in education.
TITLE: Arduino Controlled Automated Writing Robotic Arm International Journal of Innovative Research in Computer and Communication Engineering Milind Baviskar
AUTHOR: 1. LakshmanKorra 2.M. Tech Student, National Institute of Electronics and Information Technology, Aurangabad, Maharashtra, India
Today, more and more people rely on robots to get their jobs done because they are more versatile, accurate, reliable, and reduce human labor. A robotic arm is a programmed robot that functions like a human arm. The aim of our project

| e-ISSN: 2278 – 8875, p-ISSN: 2320 – 3765| www.ijareeie.com | Impact Factor: 8.317|

||Volume 12, Issue 4, April 2023||

|DOI:10.15662/IJAREEIE.2022.1204033 |

is to develop a robotic arm that helps handicapped people to write. This mechanism is programmed with a speech recognition system, allowing users to write down what they say. A robotic arm is programmed to write down words spoken by a patient or person into a microphone. The robot hand is equipped with a writing pen. You can also draw small sketches. This will be an inexpensive device that can be programmed to be written by disabled people. This paper describes the basic design of a writing robot arm.

TITLE Voice Controlled Robot Writer for Physically Challenged

AUTHOR: P. RAMYAI. U. REHANABEGUM2, P. MANIMEGALA13, Dr.S. MANIKANDAN4

YEAR: DECEMBER 2017

The robot's movements can be controlled by the user via mobile phone by issuing personalized voice commands. The robot receives voice commands from humans via microphones and performs the actual work. A voice-controlled robot (VCR) is a mobile robot accessed through a mobile phone. This project is specifically aimed at students with physical disabilities who cannot write exams like other students. In this project, a voice message is recorded using a mobile phone application and the recorded audio is sent to his Arduino board via his Bluetooth. The writing robot reacts to incoming voice commands.

TITLE: Research Article Robots Learn Writing Huan Tan.

AUTHOR: 1Qian Du, 2 and Na Wu3 Hindawi Publishing Corporation Journal of Robotics

Robots are expected to generate human-like behavior in dynamic environments [1, 2]. However, it is very difficult for robots to develop skills and behaviors from scratch without prior knowledge. As mentioned in Sloman's article, after 'birth', robots must learn both anti-social and pre-social behaviors [3]. So, some basic, simple starting knowledge, including behavioral primitives [4], or some basics for robots to explore the world and develop new knowledge and skills to survive or complete tasks. It makes sense to have a wide range of easy launch capabilities. With this initial knowledge and skill, humans can teach robots more complex movements and skills to perform much more complex tasks.

III. PROPOSED SYSTEM

A writing robot uses wireless communication to create a patient's prescription. Motion code files created using Inkscape software are used by processing software to send G-code files to the microcontroller. The CNC shield drive then sends control signals to the stepper and servo motors. Now, with the instructions given to the control unit, you will see an XY axis that behaves like this: The corresponding code sends data to the controller block connected through the interface. Using a motor driver unit along with a DAC provides a pulse width signal to the motor. The unit in which it is processed and the final output is written and displayed Remove the paper from the output unit.

IV. BLOCK DIAGRAM

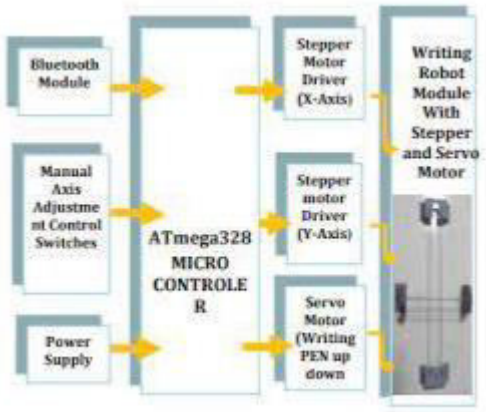


Figure 1: Block Diagram

| e-ISSN: 2278 – 8875, p-ISSN: 2320 – 3765| www.ijareeie.com | Impact Factor: 8.317|

||Volume 12, Issue 4, April 2023||

|DOI:10.15662/IJAREEIE.2022.1204033 |

V. SOFTWARE REQUIREMENTS

a. Arduino IDE

Arduino uses the software namely Arduino IDE. The Arduino IDE could be a cross-platform application composed in Java, inferred from the Preparing programming dialect and the Wiring project's IDE. It was designed to introduce programming to artists and other novices new to software development. It includes a code editor with features such as syntax highlighting, matching braces, and auto-indentation. You can compile the program and upload it to the board with one click. You usually don't need to edit make files or run programs on branches. If you prefer, you can also build on the command line using third-party tools such as Ino. The Arduino IDE comes with a C / C++ library called Wiring (from the project of the same name) that greatly simplifies many common input / output operations. The Arduino program is written in C / C++, but the user can create a working program by just defining two functions. setup () - a function that runs once when the program starts and can initialize the setup. loop () - a function that will be called repeatedly until the board is turned off.

VI. COMPONENTS DESCRIPTION

a. POWER SUPPLY UNIT

All electronic circuits operate only at low DC voltages, so they need a power supply that provides the proper voltage to function properly. This unit consists of a transformer, a rectifier, a filter and a regulator. An AC voltage, typically 230 V RMS, is connected to the transformer voltage to the level of the desired AC voltage. A diode rectifier providing a full-wave rectified voltage is first filtered by a simple capacitor filter to produce the De voltage. This composite voltage usually has ripple or AC variations. The regulator circuit uses this input to produce a voltage that not only has a much lower ripple voltage, but also maintains the same value with small changes in the DC voltage and changes in the load connected to the output voltage.

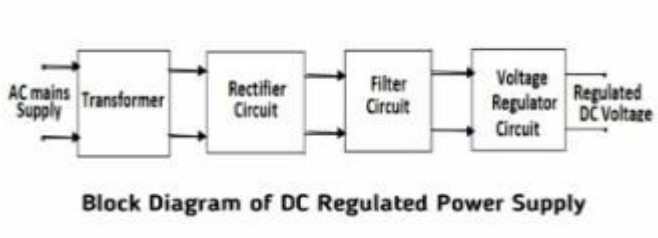


Figure 2: Power Supply Unit

b. DIODE BRIDGE RECTIFIER

A diode bridge or bridge rectifier is an arrangement of four diodes connected in a bridge circuit as shown below to provide an output voltage of the same polarity for each polarity. input voltage. The most common application for converting an alternating current (AC) input to a direct current (DC) output is known as a bridge rectifier. A bridge rectifier provides full-wave rectification from a two-wire AC input (saves the cost of a center-tapped transformer), but has two diode drops instead of one, making it less expensive than a center-tapped design for the same output voltage and it is also less efficient.

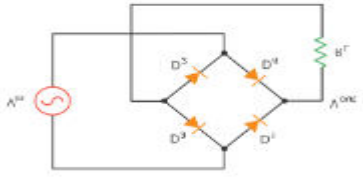


Figure 3: Diode Bridge Rectifier

| e-ISSN: 2278 – 8875, p-ISSN: 2320 – 3765| www.ijareeie.com | Impact Factor: 8.317|

||Volume 12, Issue 4, April 2023||

|DOI:10.15662/IJAREEIE.2022.1204033 |

c. TRANSFORMER

A transformer is a static component that converts electrical energy in one circuit to electrical energy of the same frequency in another circuit. You can increase or decrease the voltage in the circuit, but the current will increase or decrease accordingly. It works on the principle of mutual induction. In our project, we use a single step-down transformer to supply the necessary power to the electronic circuit. Here we are converting 230V AC voltage to 12V AC.

d. RECTIFIER

The full wave rectification project here uses a bridge rectifier. From the basic bridge configuration, we can see those two diodes (e.g., D2 and D3) are conducting while the other two diodes (DI and D4) are off during the period 1-0 to T/2. Therefore, on the negative cycle of the input, the conduction diodes are D1 and D4. Therefore, the polarity across the load is the same. In a bridge rectifier, the diode can be a variable type like IN4001. IN4003, IN4004, IN4005, IN4007, etc. can be used. But here I am using an IN4007 which can withstand up to 1000V.

e. FILTERS

To get the 0Hz DC voltage, we need to use a lowpass filter. So, a tata-capacitive filter circuit is used in which a capacitor is connected to the rectifier output and has a DC current across it. The filtered waveform is basically the DC voltage with negligible ripple, which is finally delivered to the load.

f. LIQUID CRYSTAL DISPLAY

Advances in functionality, miniaturisation, and cost of LCD (Liquid Crystal Display) controller chips have made LCDs obsolete in hobby projects as well as commercial products. LCDs themselves are difficult to drive, requiring multiplexing, AC drive waveforms, and special voltages. LCD modules simplify this driving by attaching hardware to the raw glass LCD that supports some or all of these rudimentary driving tasks. LCD modules can be divided into two groups: Some have a built-in controller and driver chip, while others have only a driver chip. Controllerless LCD displays are typically used with powerful hardware such as a laptop computer that can use a video controller to generate the complex drive signals needed to drive a display. Most colored and large (greater than 320 x 240) monochrome displays are of this type. Other common sizes are 16x1, 20x1, 20x2, 20x4, 40x1, and 40x2 (characters x lines). Fortunately, all HD44780-based displays (any size) use the same standard 14-wire interface. So, code and hardware written for one size / type of display can be easily adapted to work with all HD44780 compatible displays. Information about these displays can be easily found on the web by including “HD44780” in your search terms. Due to their widespread use, these displays can typically be overpriced, ranging from $3 for a small display to $20 for a large display.

g. SERVO MOTOR

Servo motor may be an engine which is coupled to a few frame of encoder to supply position and speed input . The output’s measured position is compared to the commanded position, which is an external input to the controller. If the home position deviates from the desired position, an error signal is generated and the motor rotates in either direction as necessary to move the output shaft to the proper position. As the position approaches, the error signal decreases to zero and the motor stops.

h. ARDUINO

Arduino is an open-source arrangement utilized for building contraptions wanders. Arduino comprises of both a physical programmable circuit board (regularly implied to as a microcontroller) and a chunk of program, or IDE (Facilitates Headway Environment) that runs on your computer, utilized to compose and exchange coding framework to the physical board.

| e-ISSN: 2278 – 8875, p-ISSN: 2320 – 3765| www.ijareeie.com | Impact Factor: 8.317|

||Volume 12, Issue 4, April 2023||

|DOI:10.15662/IJAREEIE.2022.1204033 |

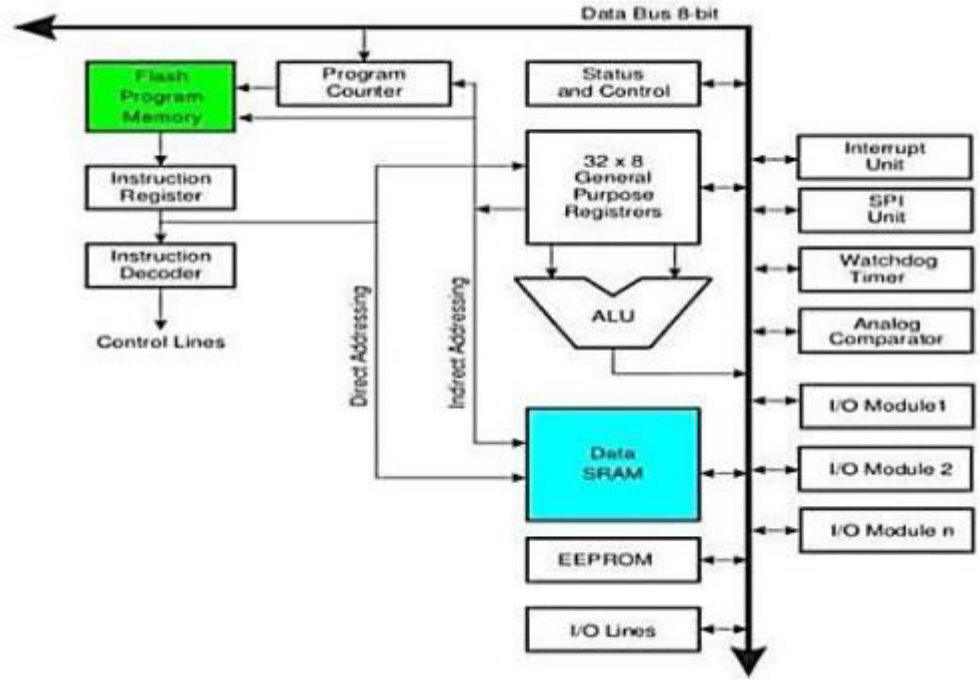


Figure 4: Arduino

i. BLUETOOTH

This is a class 2 Bluetooth module with a serial port profile that can be configured as master or slave. Drop-in replacement for wired serial connections, transparent use. Can be easily used as a replacement for serial ports to connect between HC-05 specifications.

VII. CONCLUSION

There are clear advantages to using electronic prescriptions and robotic dispensing, and they will be realized as long as three conditions are met: First, the electronic prescribing system used is integrated (to transfer information) with all other hospital software systems. Second, the dispensing robot is integrated with an electronic prescription system. The third is an automatic labeler for automatically dispensed items. Applying the above conditions, several advantages become apparent, based on the principle of no re-entry of information. In-robot items leave no room for dispensing error and improve patient safety. This process is much more efficient and allows staff skills within the pharmacy to adjust her mix. All of this results in a dramatic increase in the speed of the prescription issuance process.

REFERENCES

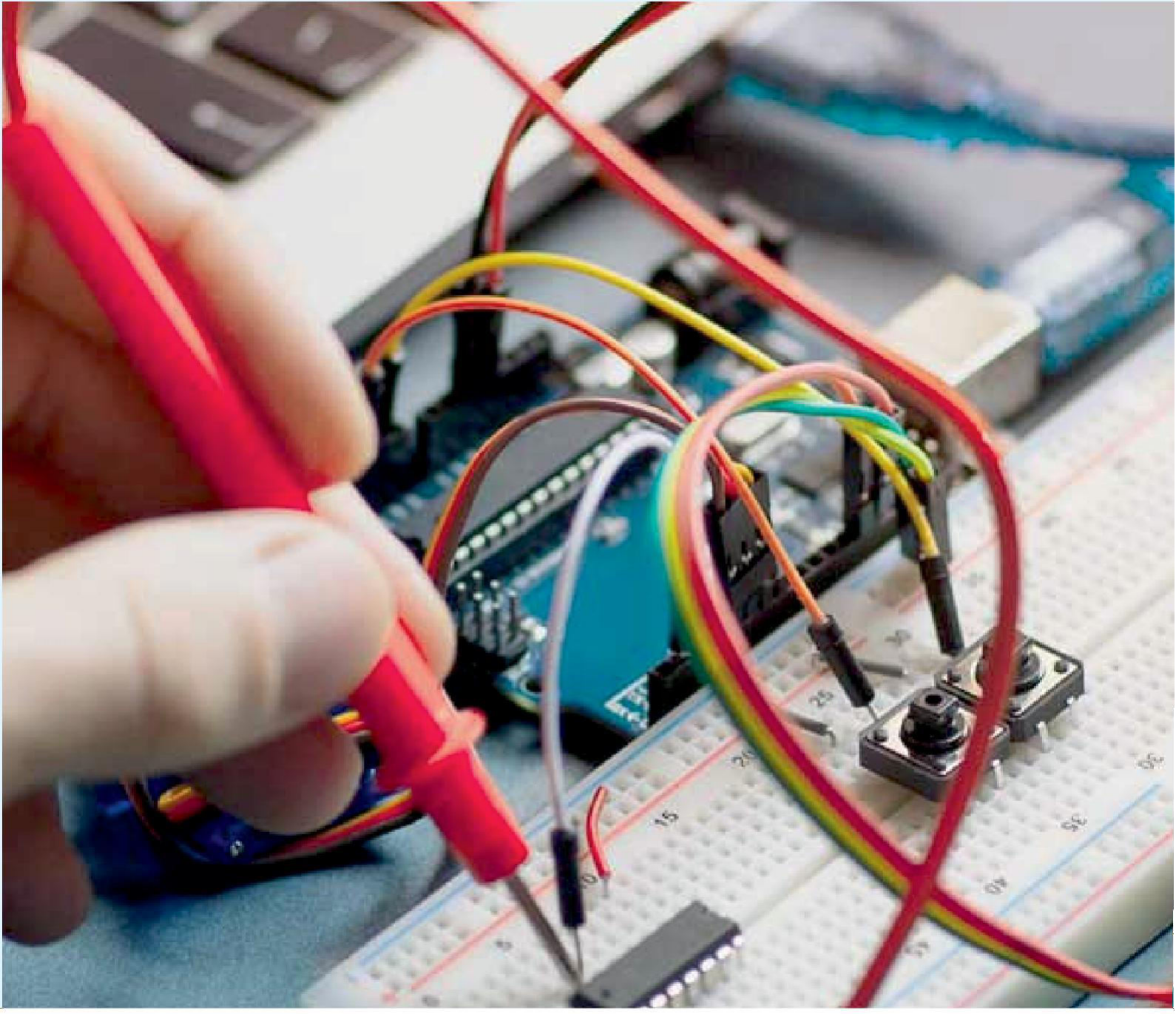
1. M. H. M. Gommel and J. Zappe, "auto portrait project: Portrait drawings with a robotic arm,"
2015. Available at:
https://www.robotlab.de/auto/portrait.html
2 Y. Lu, J. H. M. Lam, and Y. Yam, "Preliminary study on vision-based pen-and-ink drawing by a robotic manipulator," in Proceedings of the IEEE/ASME International Conference on Advanced Intelligent Mechatronics, (Singapore), pp. 578-583, IEEE, July 2015.
3. M. C. Lau and J. Baltes, "The real-time embedded system for a humanoid: Betty," in Proceedings of the 13th FIRA Robot World Congress, vol. 103 of Communications in Computer and Information Science, (Bangalore, India), pp. 122-129, Springer-Verlag Berlin Heidelberg, September 2016.
4. S. Calinon, J. Epiney, and A. Billard, "A humanoid robot drawing human portraits," in Proceedings of the IEEE-RAS
5. Farrokh Janabi and Sharifi, "current system and research directions", with the medical robots in proceedings of the IEEE, August 2012.

| e-ISSN: 2278 – 8875, p-ISSN: 2320 – 3765| www.ijareeie.com | Impact Factor: 8.317|

||Volume 12, Issue 4, April 2023||

|DOI:10.15662/IJAREEIE.2022.1204033 |

6. Florian Petit and Alin Albu Schaffer, "Robots driven by compliant Actuators Optimal Control under Actuation Constraints", in proceedings of IEEE, pp 1085-1101, August 2013.
7. Florent Lamiraux and David Bonnafous," Reactive path Deformation for Nonbolomic mobile robots" pp 967-977, 2004



INNO SPACE
SJIF Scientific Journal Impact Factor

Impact Factor: 8.317

International Journal of Advanced Research

in Electrical, Electronics and Instrumentation Engineering

9940 572 462 6381 907 438 ijareeie@gmail.com

Scan to save the contact details