

# ABSTRACT

## AUTONOMOUS-ROBOT

### INTRODUCTION:

The project “Autonomous Robot” is a two-wheeled electronically operated form of control system which has basically been fabricated to traverse any trajectory on the basis of the program written on the microcontroller. The project mainly comprises of two basic systems; namely:

1. Mechanical Component
2. Electronic Component

The project involves all the basic components of Robotics and is a purely calculated work.

### SPECIFICATIONS:

The Robot as a whole comprises of a mechanical base with two wheels at the center and four self-made castors for its stability. It further consists of two electronic circuits one of which is the driver circuit for the stepper motor and the other is the ISP programmer circuit. The detailed specifications of the robot are as follows:

1. **Base:** - Made of plywood; consists of self-made castors (four in number); four wooden bushes for the spindles of the wheels (two FLD flywheels).
2. **Driving System:** - It comprises of two unipolar stepper motors with 75 ohms coil resistance and 7.5 ° steps and the unit is driven by a BELT-PULLY arrangement. The motors are interfaced with the controller through a driver circuit comprising of ULN 2803 to give high current output to the stepper motors.
3. **Controller Circuit:** - The controller used is of the 8051 architecture. The model is Phillips 89C51RD2HBP. It is an in system programmable microcontroller and the circuit also consists of MAX 232 and LS74HCT125. Apart from this; the circuit is also compatible with normal non-isp ATMEL 8051 controller which has to be programmed separately using cross-compiler. Due to the non-availability of the ISP controller, Atmel 8051 has been used.

### UTILITY:

The project is a very basic step in the direction of robotics and is so flexible that can be modified to solve many problems. The project has been successfully used to solve the problem put up by the robotics team of IIT-Kanpur and similarly can be used to solve various problems based on following a particular two dimensional trajectory to solve any mobile problem by the addition of sensors depending on the basis of problems.

The project has been possible with continuous assiduous efforts and also owes its existence to the guidance given by various teachers of the college.

**TEAM MEMBERS:**

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