

ROBO SUPPORTING HUMAN LEG

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Abstract – This paper describes an information about with handicapped people also some aged person which are can't move their legs normally because of lack of required power to move the leg normally. Such kinds of people are unable to make movements of their legs by their own effort. To help these people **ROBOTIC SUPPORTING LEG** can be used. The idea behind this project is as per the program, manually operated switches used to move the leg. There are two motors used to provide external torque for joints of leg. Two batteries such as 6V and 12V are used for power supply. Whenever switch is on, power supply from battery transfer to electronic control device and electronic control device to wiper motor. The electronic control device is used to control the motion of motor such as backward and forward. There are three switches are used. We use three switches, one switch gives the backward motion and another gives the forward motion. The automatic switch provides the automatic movements of leg. This paper also remarks some challenges that current systems still have to meet in order to obtain a broad clinical and market acceptance.

Key Words: Paraplegia, walking support, humanoid robot

1. INTRODUCTION

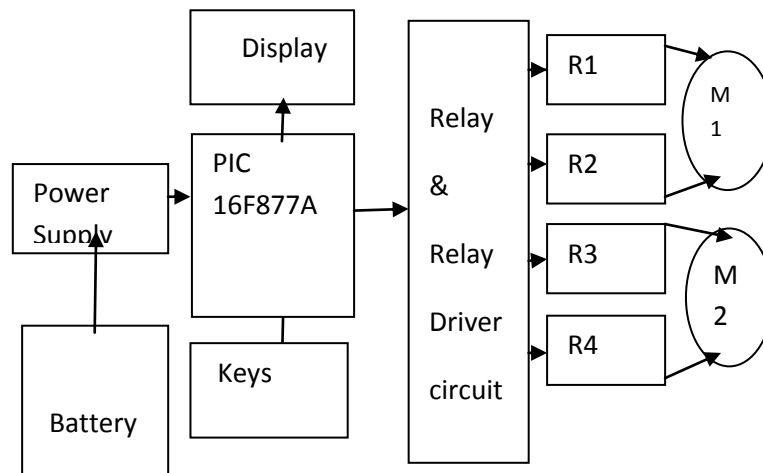
A robot leg is a mechanical leg and which is able to perform the same functions as that of human leg. This is similar function as that of human leg perform in their daily life which are based on typical programming. It is also called as artificial leg; however, the robotic leg can be controlled by both electrically or mechanically. This robotic leg have similar behavior of the human leg. People have rigidity, relaxation, involuntary contraction of the muscles and post-polio syndrome. Even if people do not suffer from these physical problem, aging bring various trouble on his/her mortality. Most of the people have the problem in there lower limb due to this symptoms or aging are unable to walk and bed ridden all day long with worst. These type of patient's feelings depressed and lose his/her the life of living. To reduce. these problems and support the patient life, it is also important and provides a safe and convenient transportation.

The main objective behind this project work is:

- ☑ This leg perform naturally to give power at joints of legs.
- ☑ To give sufficient torque at joints of handicapped and aged person.
- ☑ To provide independent while exercising the affected leg for recovery after any mishaps.
- ☑ To make handicapped and aged person not dependent in the sense of walk and stable stand.

In general, handicapped people and aged person can't perform their motion of leg naturally because of lack of power in joints (knee and ankle) of leg. If we provide the sufficient power as per calibration of power calculation required to perform for an ordinary person such that natural walk can be achieved within economic constraints.

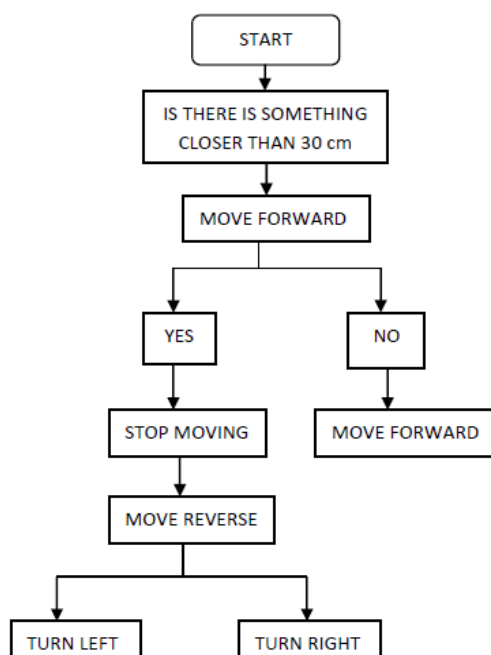
2. BLOCK DIAGRAM



2.1. Discription

PIC16F877A is central controlling unit. No need of any A to D converter. PIC16F877A compatible PIC16F877A IC is sufficient for working of this project. The PIC microcontroller and power supply is interfaced to 16*2 display achieved with the help of battery of 6V and 4.5Ah. Voltage regulator 7805 is used to get 5V regulated voltage. Controller need +5V DC voltage so we use low cost linear regulator National Semiconductor LM7805. For guarantee of the regulation. It requires input voltage at least 7.5V. . So, the unregulated power supply should supply at least this voltage under worst case current consumption assumed to be about 200miliampere. For movement of forward and reverse based on the movement is done by pressing appropriate keys by the direction two DC motor are interfaced two joints of our leg .To maintained phase sequence and movement of the motor in forward and reverse direction relay drives and relay circuit are used. ULN2003 is used for drive the motor and also called as relay driver circuit. ULN2003 is used to move motor in forward and reverse direction. 5V DC operated relay is used here patient the relay is used which are operated 5v dc. Patient can easily get appropriate motion for setting down and standing up. In auto mode, we can able to easily walk at standard walking.

3. FLOW DIAGRAM



4. TABLES, FIGURES

4.1 Tables

MOTION	MOTOR 1	MOTOR 2
Forward	Anticlockwise	clockwise
Reverse	clockwise	Anticlockwise
Automatic		
Forword	Anticlockwise	clockwise
Delay	3 second	3 second
Reverse	Clockwise	Anticlockwise



Fig . Existing Model

4.2 Figures



Fig. Experimental Setup



Fig. Modified Model

7. Conclusion

In future by changing the material which is lighter in weight having same or more strength the cost can be saved. It can be possible the change in design of structure or the desired change can be done to enhance its aesthetic and ergonomic features. Using optimum motor speed and torque cost can be saved. The programming can be done in point of view to give more easy & comfortable to that person. More switching can give the range of operation.

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