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Self-Automated System Transporte Intelligente

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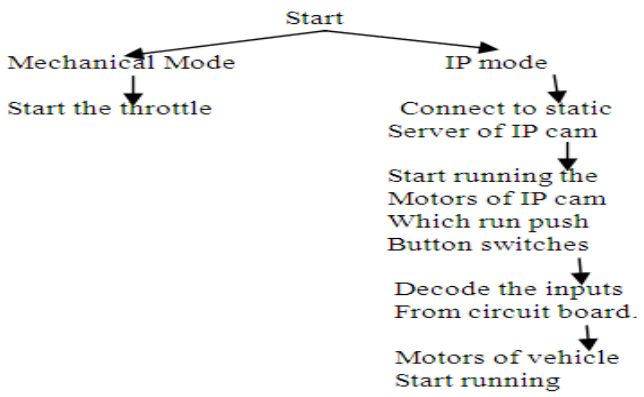
Abstract— The aim of the project is to have a self-automated wheel chair with limbs. So what is unique about this?? It can be controlled by a person staying in a different area also and the control is with an IP camera. The motors of wheel chair will be connected to an IP camera's motors and when we control the IP cam motors by a smart device or a PC it is possible to monitor it and as with the same principle; even the person sitting on it can also control it. The motors of wheel chair will be connected to a IP camera's motors and when we control the IP cam Motors by a smart device or a PC it is possible to monitor it. And as with the same principle; even the person sitting on it. Can also control it. The IP camera generates a static IP address via which it can be accessed from anywhere by connecting to that address. The motors of IP can are accessed with help of IP CAM app and this in turn via switches and micro controllers control the motors of transport.

Index Terms— IP Camera, Arduino Uno, Static IP address

I. INTRODUCTION

The main objective of the project is to eliminate an external person aid for basic transportation of Differently able people, and to also ensure an external audio video monitoring system if necessary. This Will help them do a lot of things in their daily life's like they can study, move and comfortably work in Areas with their own self mobility. One of the important aim is to provide a self-reaching facility in the Transport which would ensure that without an external support their mobile transport could reach them With help of smart phone. In case they want to talk to someone or communicate something to an external Person, they can do so with help of IP cam and a screen which is generally a tab or a phone.

II. ALGORITHM



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III. TEAM DESCRIPTION

We are team combining Mechanical, Electronic and chemical disciplines from B.V.Raju Institute of Technology, Narsapur, and Telangana. We are all from third year and with help Of Assistive Technology lab, projects which aid Differently Abled People are designed.

IV. LITERATURE AND MARKET SURVEY

We visted Rehabilitation centers, hospitals and camps and the following data were observed:

Problems they were suffering from:

1) They needed an external person for mobility

2) Difficult to convey messages to their care takers.

3) Their disability had put a hurdle to fulfill their desire of

Working in industrial areas etc. without any external assistance.

So we decided to solve their problems and came up with our idea.

V. PROJECT PROPOSAL

1) To construct a self-controllable mini portable transport.

Possible solutions:

a) Can be controlled by a joystick

b) Can be controlled using gestures.

c) Can be controlled using smart phone (accelerometer, micro controller etc.).

Well, these are definitely good ideas, but all have their own flaws like controlling using joystick is very costly but simple, using gestures is a complicated process and at the same time its costlier and could make control of wheelchair uncomfortable and irritating sometimes.

Controlling with a smart phone is a good idea.

Now coming to our project idea we extended the smart phone control by adding an extra feature of An IP camera with a capability of generating static IP address viz., which it can be controlled from any part of this world provided it has an Internet access .Adding to it our transport can not only be controlled by a phone but it also has an eye (Camera) for conferencing, inspection etc.

VI. WORKING

First of all, the IP camera generated Static IP address is identified and the corresponding smart device is connected. Then with help of an application known as IP Cam Viewer, the IP camera can be controlled using its servo motors. So when these IP Camera motors are connected in such a manner that when we turn the camera right it hits the switches with help of a small bar to give binary code; this code is decoded by a micro controller which in turn turns the wheels in such a manner that the transport turns right. So by this way we can

access our transport form any area. Apart from this smart control system, if the rider wishes to control it mechanically, a throttle system is placed along with braking via which he control the movement of vehicle can like a normal gearless bike. The wheels have the feature of tilting which help in taking turns and auto lock brake system which locks the wheels and helps it to stay stationery in steep areas without slipping.

VII. COMPONENTS

Sno	*Component*	*Specification* or Model No
1	Battery (2 No)	12V/7Ah
2	Brake	Rare clipping brake
3	Tyres (2 No)	Rubber of 8 inches
4	IP Camera	Tenvis JPT3815
5	Controller board	Arduino Uno
6	Motor drivers	STP80NF55-08-IR2109 (Half Bridge driver)
7	Motors (2 No)	12 V DC
8	Other circuitary elements	-

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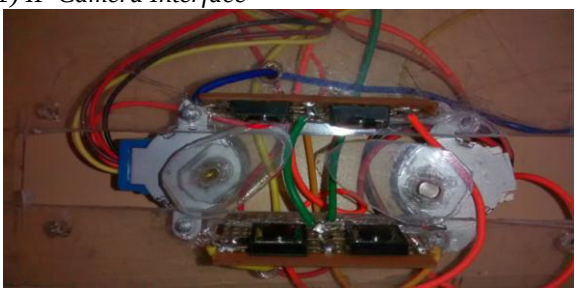
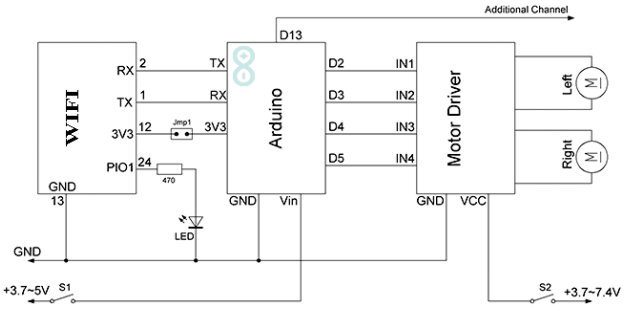
1) IP Camera Interface



Servo Motors of IP Camera turn the rectangular glass bars; they in turn push the switches via which micro controller runs the motors with help of 4 bit binary code.

2) Control Logic And Equations:



(Schematic)

Assume mass of 100 kg;
For a maximum speed of 19kmph i.e., 5.27 m/s;
P windage loss= VxVxV/180

Where V stands for velocity in kmph;

P windage = 19x19x19/180=38.1 watt

For Uphill of 1 in 20 slope (3 degrees of elevation);

P uphill= mass x height change x 10

Height change= 5.27/20 = .268 m

P uphill = 100 x .26 x 10 = 263.8 Watt.

Therefore, P net required = 300 watt (considering

Maximum requirement).

Considering for 24 V, 7 AH battery;

Current required I = 300/24 = 12.5 A

Time = 7 x 60 / 12.5 = 33.6 minutes

Distance it will travel = 5.27 x 33.6 x 60 = 10624 meters

Or 10.624 Km

So at a speed of 19kmph, with given battery it would Travel for 10.624 km for a complete charge of battery.

Similarly for 12 V, 7 AH battery it would travel for 5.33 Km.

Electrical specifications of IP Camera:

Input Voltage: 5 V

Input Current: 1 A

So the battery we use would be more than sufficient to suffice our

Requirements provided we have a controller circuit to protect the

Camera.

ACKNOWLEDGMENT

We thank Mr. Chary sir for his invaluable technical help without which we could have never completed our product. We thank P.Subhashini madam for extending her help in terms of facilities in the form Assistive Technology Lab and being a constant Motivational source. We also thank all rehabilitation centers, camps, hospitals etc. for giving us an opportunity to interact with our customers and identify their problems. Finally we thank the Almighty for giving us an opportunity to serve and fulfill the desires of Differently Abled People.

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