

Labview Based Stryker Transport Stretcher

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ABSTRACT

Transportation is seem to be a problem in transferring patient over long a distance even over a short distance. People face problems like if a patient is going to move from an ambulance to stretcher or vice versa and moving stretcher from one place to another. Sometimes patients are very heavy so in order to move stretcher there is need of multiple people if we are transferring the patient from ambulance to stretcher it will obviously create a disturbing situation that can cause problem for patients. Special type of stretcher is thought to design that can work as a bed in case if they are just fitting it into ambulance, that special type of stretcher can be automatically controlled through computers or mobile application. So that multiple people are not needed for moving the stretcher hence a single person can handle it easily. This stretcher also includes different features that aren't included in others stretcher.

INTRODUCTION

Transporting a patient is not only affecting them but it also the health care professionals. Therefore, we have established mobility solutions so that causes reduced pressure, these stretchers basically easily steering and also turning with that it provides simple and easy start up effort.

It intended to guarantee parental figure security and proficiency while improving the patient experience. It can be instrumental in lessening parental figure wounds amid persistent care. Prime offers four portability choices and uncommon patient solace. Patients can alter their own positions without calling a parental figure for help, hence using a mobile application and if they are in serious condition so stretcher can be controlled through a controller room by using the mobile application or using lab view software in computers.

A variety of available support surfaces and configuration options give Prime the versatility you need. Combined with multiple mobility solutions help accommodate heavy patients and long transports. Power and control options give more flexibility and control than ever to both nurse and patient. An assortment of accessible help surfaces and setup choices give Prime the adaptability you require. Joined with different portability arrangements help oblige overwhelming patients and long transports. Power and control choices give more adaptability and control than any time in recent memory to both medical caretaker and patient. With that it has an infrared sensor that detects the obstacle and then alarm will buzz whenever sensor detect obstacle, hence there is camera module too in stretcher that clearly show the path to the controller of the stretcher who is controlling it through specific controlling room, that made easier movability of stretcher hence it do not use a lot of staff to move it and if patient is heavy that is also difficult for the staff to move the stretcher but it is having strong motors that can easily move the stretcher that is if accommodating heavy patient. It has variety of surfaces that are basically comfortable for patient skin those surfaces do not cause blister or any skin irritations so patient can stay on that

for long period as it is comfortable and soft, hence it sustain a positive patient experience.

MATERIALS AND METHOD

Two main methods involved

- 1-Hardware
- 2-software

Hardware:

In order to make the automatic stretcher we required following main components:

- Four motors
- Battery of 9-12 volts
- Camera module
- Infra red sensor

Lego based stretcher actually use mainly four motors in order to provide the required transportation. This stretcher utilise energy in order to work hence it uses a battery which is responsible to move motors in desired direction of controller. While we can use a camera module too in it so that controller can locate the location of the stretcher and it can easily be controlled by the controller through controlling room. While IR sensor is mainly used in order to recognize the obstacles.

Software

In order to control that stretcher through computer we will basically need one software mainly named as LABVIEW along this software we'll download a toolkit named as "LEGO".

MINDSTORMS NXT"

We will download this toolkit because we are basically controlling a stretcher that is lego based hence we required this toolkit in labview software so after having that toolkit we'll build a VI (program) that can basically control that stretcher.

Virtual Instrument (VI)

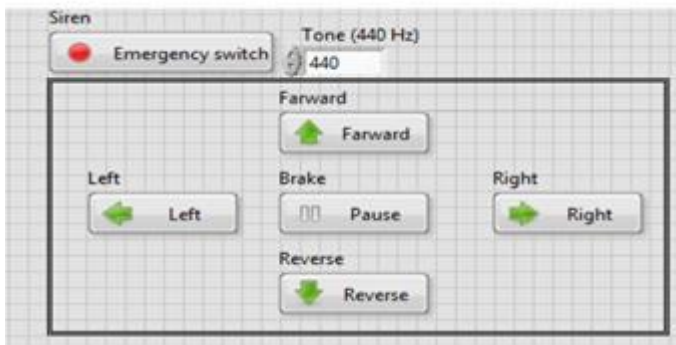


Fig. 1 VI Description

Above figures basically representing the VI. Figure 1 contains six subblocks each block has its particular work. As the first block is concerned to move the motors in forwarding direction as if conditions meet, though it is labeled as port B and C that is basically the ports where we have attached the wiring of our lego based stretcher's motors, there are basically four ports A, B, C and D hence we randomly took two ports as B and C so these B C are names of the port which are mentioned in subblocks, now second block is for Reverse and then we have third and fourth responsible for left and right movement. With that we have block five which is responsible for stopping the stretcher wherever we want to stop that hence it is responsible for brake system, and in the end we have the sixth block which is alarming block that means when ever any obstacle come the infrared sensor will detect that obstacle and then buzzer ringing will start and we can also set the frequency of alarming system. Here in this, VI we have ended our program up to buzzer system but we can add more subblocks as long as we want other features to be implemented in the stretcher. And in the end we'll close the whole subblocks with while loop we used this closed loop because we want it to run as long as conditions meet. Figure 2 represents the front panel this front panel that will act as a remote that means the labelling we can see in as forward backwards etc in the second figure are used in order to move the stretcher in respected directions, this front basically resulted from the VI we made it by using those subblocks and giving conditions and commands.

Flow chart

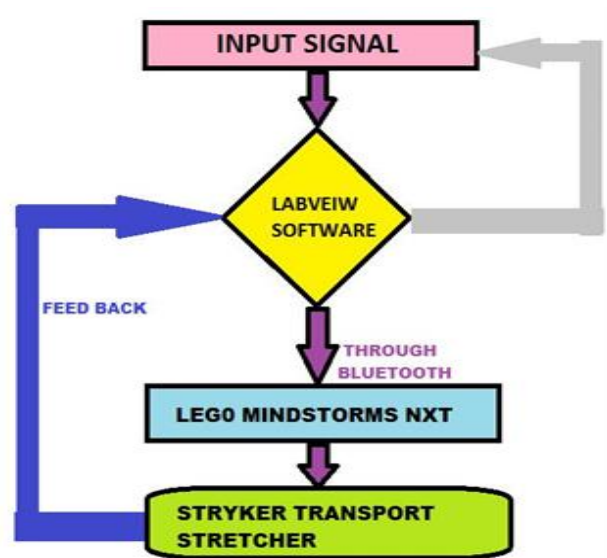


Fig. 2 Flow chart
Table 1

EV3 PARTS	SPECIFICATION
Large motors	160 – 170 RPM
Bluetooth USB	2.0 (To talk with pc)

CONCLUSION

This stretcher makes it possible to consume less time, energy and persons by controlling it automatically. Hence a person can control it through a mobile, that brings a new innovation in stretchers that they can be controlled by a single person without applying a physical force from a man but instead of that a battery will provide power to four motors that rotate in order to move wheel according to need of a controller.

REFERENCES

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