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VIRTUAL DOCTOR ROBOT

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ABSTRACT :- Doctors are usually needed to work at every hospital and emergency centre every now and then. But it is not feasible for every doctor to be available at every place at desired time. From a desktop computer or laptop.This restricts the doctor's ability to freely travel among hospital roo ms, see patients, or even be in the operating room as needed.To assist in resolving this issue, we have cre ated a virtual doctor robot that enables a physician to virtually walk about and converse with individuals in faraway locations as needed.For simple navigation, the system uses robotic car with four wheel drive. The robot also has a controlling box for the electronics as well as a mounting for a tablet or phone.Livevi deo calls are held on a mobile device or tablet.The physician can manage the IOT-based panel to robot. The control commands sent online are received by the robot controller. The robot controller operates over Wi-Fi internet. The received commands are received in real time and the robot motors are operated to achieve the desired movement commands.

Keywords: hospital, health care centre, virtual doctor, robot

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I. INTRODUCTION

Robotics is one of the technical disciplines that is currently undergoing rapid development. I t is widely employed in the industrial sector to carry out a variety of tasks, including painting and spot w elding as well as the loading and unloading of tools and workpieces.
Robots are designed to replace people who work in hazardous and labor-intensive environments.
Robots may also be utilised in distant workspaces that are inaccessible to people.
When an antiviral medication is in short supply, it's critical to develop new countermeasures and make s ure that those that are already in place are still effective in light of the current situation. The point of this investigation is to design and build up autonomous robot system for consulting of patents as wireless robot innovation. Furthermore, first add box will be attached to the developed robot to fulfil the requirement of application. On college premise, the robot performance will test. With the advent of the era of artificial intelligence and rapid growth of robotics, increasingly jobs are being replaced by robots. Robots will accelerate to improve social productivity in several future years to create efficiency and convenience for human life in the future.

Compared with traditional robot, virtual robot integrates programming, modelling and controlling, which can assist related learning of robot courses more efficiently and directly under the condition of saving time and equipment cost. A concept of virtual robotics based on virtual robot platform as autonomous robot is proposed in this project. At the same time, virtual doctor robot tasks of consulting for hospital patients by using application of robotics. Which is also proposed to improve doctors' capacity by saving time, effort & safety for designing virtual doctor robot comprehensively and improve consulting quality. This work describes the direct and inverse kinematics mathematical framework, the development procedure, and data communications interface for the implementation of an augmented reality version of a six degrees of freedom (6-DOF) Cabot (collaborative robot) under the Unity platform.

II. METHODOLOGY

Cadets and the mentor routinely met at the start of the project design phase to develop the "o ptimal" robot. Before final judgements were reached, the initial design was changed numerous times.
Motors, sensors, batteries, and an electrical circuit board were originally intended to be housed inside th e robot frame.
The two cadets each individually created a frame for the robot, which they then assembled after weighin g the benefits and drawbacks of each design (educational result no. 5).
In order to create their own robot frame, the cadets first examined other robot frames, demonstrating int ellectual curiosity (educational outcome number six). During the design stage, the cadets also had opportunities to practice their skills of framing and resolving a problem which has numerous possible solutions (educational outcome number two); each initial design solution was then evaluated and studied among the group. The cadets exercised their oral communication skills (educational outcome number three) while presenting their solutions to the team. Finding a suitable motor for the motion control of the robot forced the cadets to again solve an ill-defined problem.

The cadets learned advantages and disadvantages of various types of motors: dc vs. stepper, permanent magnet vs. charged, brush vs. brushless, etc. This design phase renders itself naturally to skills of the framing and resolving a defined problem as well as teamwork skills. In the beginning of the project design phase, cadets met with the mentor regularly to create "optimal" vehicle. The initial design was modified many times before final decisions were made. The vehicle frame was first designed to house motors, sensors, batteries, and an electronic circuit board. To develop the vehicle frame, the two cadets independently designed separate frames which were later combined into one after studying advantages and disadvantages of each design (educational outcome number five).

The cadets researched various vehicle frames before designing their own, which indicated intellectual curiosity (educational outcome number six). During the design stage, the cadets also had opportunities to practice their skills of framing and resolving a problem which has numerous possible solutions (educational outcome number two); each initial design solution was then evaluated and studied among the group.

1) 3600 camera Swing arm design.

2) Vehicle transmission components design.

Motor selection for 3600 swing cameras:

T = Torque transmitted by the motor N.m.

F = Load on motor = 1 kg = 9.81 N. (Assume) R = gear radius = 40mm = 0.04 m.

T = Fx R

= 9.81 X 0.04

T = 0.3924 N.m.

P = Power of motor

N = Speed of the motor = 60 rpm. (Assume)

P = 2 Π NT 60

= 2 Π x 60 x 0.3924 60

P = 2.46 Watt.

Thus, selecting a motor of the following specifications

- Single phase DC motor
- Power =50 watt
- Speed= 60 rpm

Motor Torque

P = 2 Π NT 60

T = 60 x 50 2 Π x 60

T = 7.96N-m

Power is transmitted from the motor shaft to the input shaft by means of a gear drive,

- • **Spur gear pair system: [12] [13]**

No teeth on gear Zg = 25

No teeth on pinion Zp=25

Material of gear & pinion both are nylon, DDB. P No.1.41. [11] Sut p =82 N/ $mm2$

Sut g =82 N/ $mm2$

Application factor ka = 2

Load distribution factor km= 1

Factor of safety Nf = 1.5

BHN = 24

Power P = 50 Watt.

Np= 60 rpm

Beam strength (δb)

6bp $=Sup$ =82 = 27.33 N/mm2 33

6bg= Sug =82 = 27.33 N/mm2 33

Assuming **200** full depth involution system, Yp=0.484 - 2.87=0.484 - 2.87 = 0.3692

Yg=0.484 - 2.87=0.484 - 2.87 = 0.3692 Zg 25

Now, δb . Yp = 27.33 ×0.3692= 10.0902 N/mm2 δb . Yg = 27.33 ×0.3692= 10.0902 N/mm2

As δb . Yg ≤ δb . Yp

Gear is weaker then pinion. Hence, it is necessary to design the gear for bending.

Bending force (Fb)

Fb=6bg.b .m.Yg

=27.33 X 10m X m X 0.3692

Fb =100.902 m2 N Wear strength (Q)

Q = 2Zg = 2X25 =1 Zg.+Zp 25+25

Load stress factor (K)

K=0.16[BHN]2= 0.16[24]2= 9.216 x 10-3 N/mm2 100 100

Bucking eqn for the weer strength (Fw) Fw $=dp \times b \times Q \times K$

= 25m x 10m x 1 x 9.216 x 10-3 Fw=2.304 m2

Fb ≤ Fw design should be on wear failure Effective load

V=π×dp×np = π×25m×60 = 0.078 m m/s 60×1000 60×1000

Tangential force (ft)

Ft=P = 50 N=636.619 N V 0.078m m

Working :-This system is used wired remote operated virtual doctor robot. In normal travelling of vehicle, the motor will control by wire remote switch either forward or reverse direction. Additional motor will rotate swing arm as per required direction for camera rotation. When we stop near any patent for consulting then, the vehicle stop & communicate to patents by video camera. This control unit operates the wire remote module according to the 12 VDC battery power & input signal. The remote unit uses one more motor driver button for driving one DC Motor for rotary disc operation with a mounted on its shaft for rotation of camera. Thus, in the event of the robotic vehicle is moved & steer over to the location by operating the wired remote button etc. In this section we present the novel design approach for an autonomous robot, where the virtual platform and the robotics vehicle are one entity rather than two separate and attached modules. In other words, the robotics vehicle platform is used to consulting the patients as a virtual doctor. This way, we can use transmission components, motors; controller & camera that provide the manipulator"s dof"s, also provide the mobile platform"s dof"s. in future.

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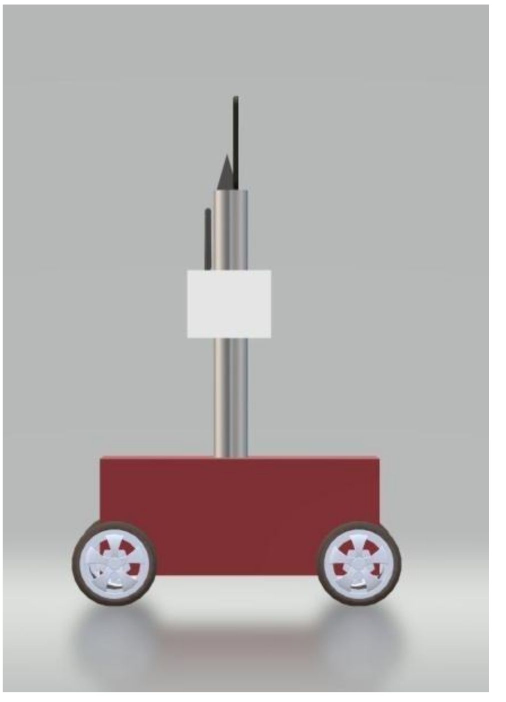
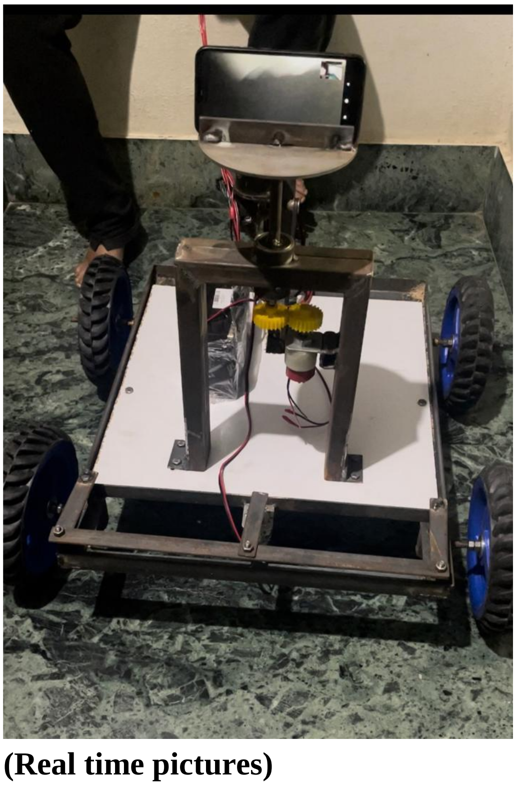
(Front view)



(side view)



(Real time pictures)

III. RESULT

Automated virtual doctors consult on patents utilising wired remote controls and electrical c ontrol systems.We created a remotely controlled, electrically wired robot.

As a result of the high cost of competing commercial robot systems, this robot will be updated to fully a utomate controlling utilising a higher configuration wireless remote controller.

This robot can carry out the required tasks quickly, consistently, and accurately, negating the need for o ngoing maintenance for surveying and consulting on patents after certain modifications.
For the sole purpose of consulting on patents, we shall just create a model. & surveying virtual doctor robot. In this we have used control with required specifications. But if we want to develop an actual for patents consulting purpose & surveying robot that is to be used in the field, we can use the components & controls with higher specification and capacity to increase the efficiency of the system

IV. CONCLUSIONS

As we come to a conclusion with this report, we feel quite satisfied with having finished the project assignment far ahead of schedule and having gained a great deal of practical expertise in meeting manufacturing schedules for functional project models.Therefore, we are pleased to say that the mechan ical aptitude test proved to be a very valuable tool.Despite the difficult challenges that the design criteria imposed, we were able to solve them since there were excellent reference materials available.
By choosing quality raw materials, we were able to machine the different components to very tight toler ances, reducing the severity of the balancing issue.It is unnecessary to emphasise here that we made eve ry effort possible during the machining, manufacturing, and assembly work of the project model of

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