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Medical Diagnosis Chair

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Abstract

This research study is introducing new medical equipment, which is called a medical diagnosis chair, as a tool for reducing error due to misunderstanding between Doctor and patient. Protecting the rights of patents and doctors in case of medical error in diagnosis or therapy. This medical chair is only for diagnosing of respiratory system , digestion system ,blood circulating system. Using Artificial intelligence and computer programs for defining the human body problems by using sensors for data collection is a fundamental concept for the diagnosis of medical chairs of a special mask for measurements of air flow rate from the inlet to the respiratory system and outlet flow rate, detection of the presence of bacterial or viruses in the outlet air flow. Based on these measurements, a computer program with AI is able to define the efficiency of oxygen transporting in blood. And detect most of the diseases in the respiratory system. The measurement instruments transfer the data to the acquisition system. These data are analyzed by special software and a huge database for defining the best medicine for the patient. Then these data are used as input for diagnosis software. This software is programmed based on fuzzy logic with a database for medications and treatment for every clinical case. To define the problem and the optimum treatment and medications up to date.

Keywords: Diagonsis, Respiratory, Human body, AI, Instruments

1. Introduction

Medical diagnosis is a process for defining health problem and the cause, such as disease, injury or poisoning, but can also be the limited care or service provided for a current condition .The design of this chair is based on assembly design. The medical diagnosis issue has a long history. Due to several aspects of patient rights and doctor rights. The medical equipment will be an important part of the healthcare system for improving health care service for the people. Considering it very important to help doctors to be up-to-date for all medications' treatment for all diseases over the world. The data collected from different for sensors and transmissions to computer software programs to analyze the data and produce different graphs and provide the diagnosis report with possible treatment and medications up to date. This machine will improve healthcare service significantly [1,2].

1.1 Conceptual Design

The diagnosis chair measures basic human body parameters such as weight, temperature profiles for the whole body, heart blood rates, blood pressure, and heart ECG graph in the first step and data is acquired by a computer program for primary analysis in the second step, which details measurements for respiratory system or digestion system or blood system based on the problem location from first step. Using artificial intelligence and computer programs for defining the human body problems by using sensors for data collection is a fundamental concept for the diagnosis of medical chairs. Development of a special mask for measurements of air flow rate from the inlet to the respiratory system and outlet flow rate, detection of the presence of bacterial or viruses in the outlet air flow. Based on these measurements, a computer program with AI is able to define the efficiency of oxygen transporting in blood. And detect most of the diseases in the respiratory system. The measurement instruments transfer the data to the acquisition system. These data are analyzed by special software and a huge database for defining the best medicine for the patient.

This software application is integrated with artificial intelligence to keeping doctors up to date for the development of new medications or new treatment techniques. Robotics arms technology for handling instruments and carrying different measurements on patients. This kind of equipment will be reducing medical treatment errors and protecting the rights of doctors and patients. In marketing now there is some product like: VXDIAG VCX SE16 all-in-one diagnostic apparatus+2TB solid disk software+Lenovo T470 computer complete set or medical computed tomography (CT) machine x-ray beam cross-sectional CT scanner machine price for diagnosis [11]. But there is no integration of the software with artificial intelligence and no medication database or selection of the best treatment for every patient case. Detection of blood system problems from blood pressure disease, high level of sugar in blood, or other blood components systems. This can be done by measuring all related parameters suitable by using a suitable sensor for every parameter and data collected by the computer system. For diagnosis of the problem related. Such as blood flow rate, blood pressure, and temperature profiles in the main lines of blood networks, blood cells, blood gas, and blood

electrolyte. The main components of the respiratory system are the lungs, conducting airways, pulmonary vasculature, respiratory muscles, and surrounding tissues and structures.

Development of a respiratory mask for measurements and analysis of air flow inlet and outlet and integration with gas measurement sensors in blood. In the first stage of building such a chair, first building a chair with traditional measurements instruments such as temperature profile for whole body, blood pressure, heart rate, body weight, the blood sample for analysis is taken by a robot arm and handled to the sample analyzer for analysis. These parameters are transmitted to computer software for defining areas of the problem. The software is defined as the possible causes of the problem and providing possible medicine and treatment [9,10,12].

1.2 Theory of Medical Diagonsis Chair

The first step is the basic structures and mechanisms of a chair with all accessories, the Second step, development software for analyzing for data. The medical diagnosis chair unit is specially designed to operate measurements. health instruments by easily measurements the patient's whole body in up and down side so that doctor can easily diagnosis patient by using software on a computer .this mechanism can be controlled by remote. All devices and diagnosis chair are integrated to form an engine providing power mechanisms. The design medical diagnosis chair is passed through several steps. The linear static structural analysis is required for the weight and size of various components. Then design the mechanisms for robot arms of different measurement instruments. The robotic arm uses different measurement instruments, such as a wireless digital stethoscope for analysis acoustic vibration analysis, wireless camera for drawing temperature profiles of the human body.

The chair arm has a sphygmomanometer for measuring blood pressure profile and pulse oximeters for measuring oxygen concentration in the blood, under the slip seat weight sensor for measuring human body weight. Data acquisitions system connected with computer for drawing different profiles for various parameters of the human body. Then these data are used as input for diagnosis software. This software is programmed based on fuzzy logic with a database for medications and treatment for every clinical case. To define the problem and the optimum treatment and medications up to date. The diagnosis medical chair Machine is equipped with an integrated platform for diagnosis equipment and a data acquisition interface for transmission data to a computer for different analysis software programs. Using these equipment's for diagnosis of diseases can be integrated into comprehensive computer software programs for proposing the best treatment and medication up-to-date machine. It is very important to have accurate medical diagnosis to develop a special mask for measurement of air flow rate in and out of the human body. This mask is handled by a robotic arm for measurement of microbe content in the airflow outlet respiratory system and analysis of saliva, water vapor, and gases [3-6].

1.3 Structure Analysis of Diagnosis Medical Chair

The medical diagnosis chair is structurally ergonomically shaped so the human body can comfortably fit into the chair. The chair body is composed of the seat, the arm rests, the robotics arm, the headrest and ramp structure a L-shaped ramp like structure. Under the seat part, the sensor for weight measurements. The location of the weight sensor is perpendicular to the center of the gravity line of the patient. Inside the armrests part are the sensors for blood pressure and oxygen content in blood measurements. Robotics arm for measurement of temperature profile over whole of the patient body and sensor for acoustic measurement in the patient body and all required measurements for the patient's body. The medical diagnosis chair structural analysis is calculations of the stress and strain of the chair. The values of stress and strain must be within the limit of the factor of safety of this equipment.

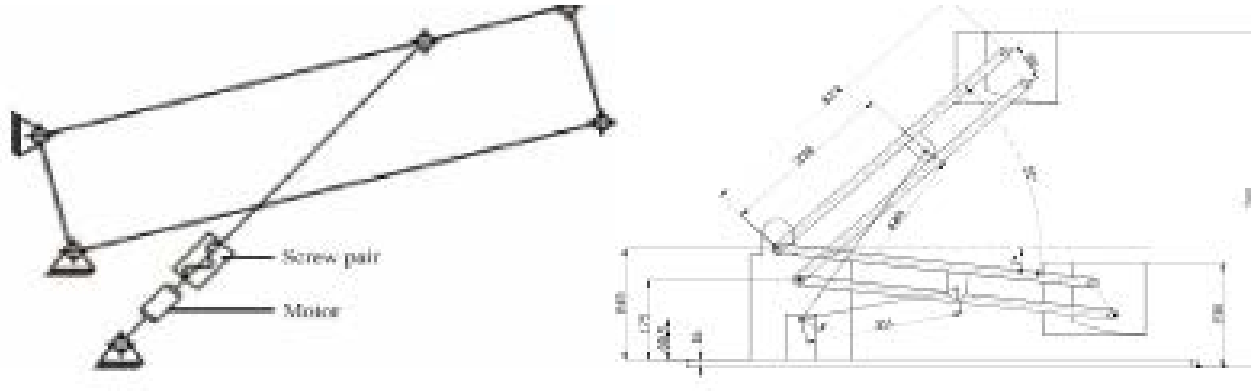

Figure 1: Basic Medical Chair

1.4 Mechanism Design for Medical Diagnosis Chair

The medical diagnosis chair lift is required to make the patient comfortable with different instruments carrying the measurements across the whole patient body. In the fig.1 shows schematic diagram of mechanism. The mechanism of lifting is used by four-bar mechanisms.

Figure 2: Lifting Mechanisms of the Chair

Including the calculations for designing robotic arms for handling different types of measurements. Dynamics design analysis and structure analysis for the whole chair mechanisms. The whole design, including velocity analysis, acceleration analysis, and forces analysis for dynamics design analysis. for structural analysis, only calculation of stress-strain for the whole chair and factor of safety for the chair [8,9].

2. Results and Discussion

The medical diagnosis chair is an important tool for enhancement of medical treatment and keeping the rights of patients and doctors in case of medical error. The medical diagnosis chair will be classified based on the diagnosis system. Such as the medical diagnosis chair for the blood system and respiratory system. For every medicine specialization. Using artificial intelligence and computer programs for defining the human body problems by using sensors for data collection is a fundamental concept for the diagnosis of medical chairs. This software is programmed based on fuzzy logic with a database for medications and treatment for every clinical case. To define the problem and the optimum treatment and medications up to date. The diagnosis medical chair Machine is equipped with an integrated platform for diagnosis equipment and a data acquisition interface for transmission data to a computer for different analysis software programs.

3. Conclusion

The development of medical diagnosis chairs is an important for solving problems related to the rights of patients and doctors. This research study is introducing new medical equipment, which is called a medical diagnosis chair, as a tool for reducing error due to misunderstanding between doctor and patient. Protecting the rights of patents and doctors in case of medical error in diagnosis or therapy. The medical equipment will be an important part of the healthcare system for improving health care service for the people. Considering it very important to help doctors to be up-to-date for all medications' treatment for all diseases over the world.

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