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Varicose Vein Detection

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ABSTRACT: This paper presents a Varicose Vein Detection. The proposed system consists of a wearable device, detection sensors, and coin motor. Varicose veins are veins that are twisted and bulging. Varicose veins can form near the surface of the skin (superficial veins). Varicose veins most commonly affect the veins in the legs. This is because standing and walking increase the pressure in the veins of the lower body. In this project, a rehabilitation monitoring and exercise device. 5+1 thermistors are used where the former is for the lower body and the latter is for the upper body to keep track of the temperature. Comparing the temperatures of the lower body as well as the upper body and with the detection of force in the legs will activate the motor to give in the exercise to subtle pain and the block of blood in the nerves. The signal acquired from the thermistors and force motor is processed by Arduino using ZigBee for varicose pain detection. When the system was running, it was able to identify a three-degree difference in force and temperature and successfully install the coin motor.

KEYWORDS: Varicose Veins; Automated Temporary Treatment; Arduino; ZigBee; Rehabilitation System

I. INTRODUCTION

The doctor evaluates whether there are lesions in the human body, as well as classifies and diagnoses the lesions, using diagnostic medical images. As a result, medical image classification and recognition may now be done automatically. It drew a lot of interest. Varicose veins in the lower extremities have been closely related to endothelial cells from the onsetof vascular inflammatory disorders. We discovered that 50 percent of random adult body x-ray samples were 55-64 years old, 83 percent were male, and 87 percent were female. This study proposes a varicose vein detection algorithm based on the lower extremities in order to automate the classification and detection of varicose veins in the legs. Regularand proper exercise can help patients who have had surgery lessen discomfort and perhaps save their lives . MSDCNN stands for multi- scale deep learning and photographs of vascular endothelial cell inflammation. According to a study conducted by Thomas K. et al., 76 percent of patients who completed a home exercise programme experienced considerable pain alleviation and enhanced joint mobility. First, we took pictures of vascular endothelial cells in both varicose vein sufferers and healthy people. Second, many convolutional layers are used to extract multi-scale properties of vascular endothelial cell images[4]. The MFM activation function is then used instead of the ReLU activation function to create a competitive process that extracts more compact features while lowering network layer parameters . Finally, to simplify network parameters even more, the network uses a 3 3 convolution kernel for network feature extraction and a 1 1 convolution kernel for dimensionality reduction. Because it is not tailored for varied levels of gravity, the use of this device is confined to a specific group of patients. Search According to Thomas K. et al., 76 percent of patients who followed a home exercise programme experienced significant pain reduction.

II. RELATED WORK

The project's technology advancements include varicose veins patient monitoring and automated treatment, with the goal of providing a temporary solution for varicose veins patients to improve blood circulation and normalisation.

III. PROPOSED ALGORITHM

Varicose veins patient monitoring and automated therapy are among the project's technological developments, with the purpose of offering a temporary solution for varicose veins patients to improve blood circulation and normalisation.

A) Arduino:

Arduino is an open-source, low-cost electronics platform featuring basic hardware and software. Arduino boards can translate inputs like light from a sensor, a finger on a button, or a tweet into outputs like turning on an LED,starting a motor,or publishing anything online. You can command the board's microcontroller to do something by sending it a set of instructions. The Arduino software is straightforward to use for beginners.

B) 9V Battery

The nine-volt battery, also called a 9-volt battery, was a common size of battery used in early transistor radios. It has a rectangular prism shape with rounded sides and a polarised snap connector at the top. This is used in smoke detectors, gas detectors, clocks, walkie-talkies, electric guitars, and effects units.

C) Thermistor

A thermistor is a type of resistor that is far more temperature sensitive than regular resistors. The words thermal and resistor are combined to form the phrase. Thermocouples are commonly used in inrush current limiters, temperature sensors (typically with a negative temperature coefficient or NTC type), self-resetting overcurrent protectors, and self-regulating heating components (typically with a positive temperature coefficient or PTC type). The probe determines the working temperature range of a thermistor, which is typically between 100 °C(148 °F) and 300 °C (572 °F).

D)ZIGBEE:

The resistance of Force Sensing Resistors (FSR) diminishes asthe force applied to the active surface rises. The sensitivity of its force has been fine-tuned for use in human- machine interfaces. Although they have some similarities, FSRs arenot the same as load cells or strain gauges. FSRs do not allow for precise measurements. The resistance of an FSR is determined by the pressure applied to the sensing surface. The less resistance there is, the more pressure you apply. The resistance range is exceptionally broad: from less than 10 M (no pressure) to more than 200 M (high pressure) (max pressure). The majority of FSRs can detect forces ranging from 100 g to 10 kg.

E) Vibrator Motor:

Precision Microdrives currently produces coin vibration motors, also known as shaftless or pancake vibrator motors, in diameters ranging from 8mm to 12mm for our Pico Vibe line. Pancake motors are compact and simple to operate. They canbe installed using a permanent self-adhesive mounting method and can be incorporated into a variety of designs because hey have no moving parts on the outside.
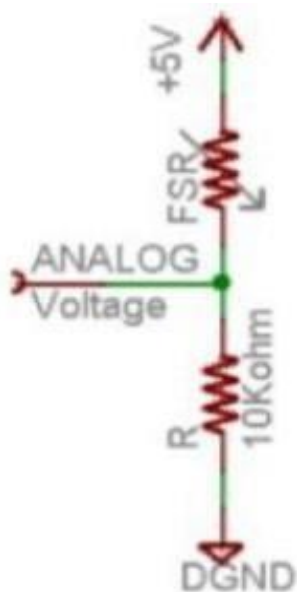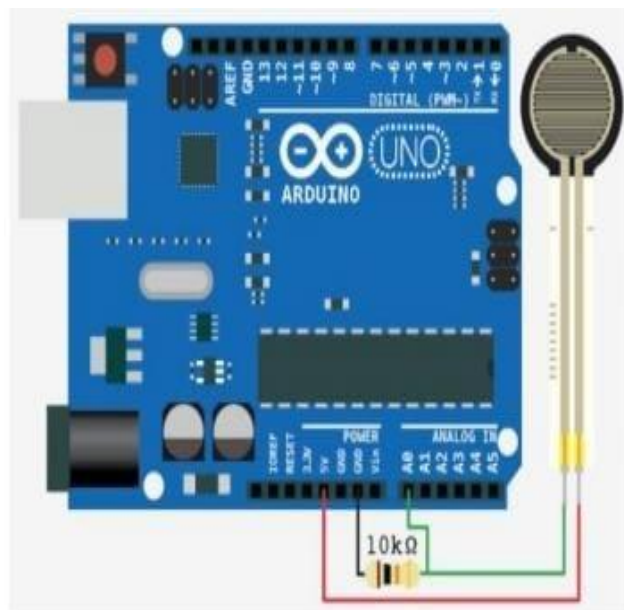

| Fig.1.Ad Hoc Network of 5 Nodes | Fig. 2. Energy Consumption by Each Node |

V. CONCLUSION AND FUTURE WORK

Inflammation of vascular endothelial cells is linked to varicose veins in the lower legs. This paper uses vascular endothelial cells as the study object to create a deep convolutional neural network for varicose veins in the lower extremities in order to improve classification and identification accuracy. The network first analyses the data layer using the Google-inception Net model as the first convolutional layer, then extracts multi-scale picture features using multiple convolutional layers to increase the network's feature extraction capabilities. Simultaneously, rather of employing the ReLU activation function, the MFM activation function is employed to create a competitive mechanism that can extract more compact features and minimise network layer parameters, hence improving network performance.

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