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Development and Analysis of Physiological Parameter under Geopathic Stress using LabVIEW Test bench

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Abstract: Geopathic Stress is the general term used for energies emanating from the earth which affects certain places and can have the ability to disturbed the normal functioning of human body. The aim of this research work is to develop a virtual instrumentation system for the analysis of human body parameters under Geopathic stress using LabVIEW. In this research paper microcontroller based measuring instrumentation system was implemented. The system design comprises the hardware realization of signal detection, data recording and analysis. The response of human body is checked using biosensors. In this method, the variation in physiological parameters such as body temperature, SpO2, heart rate and ECG were studied under Geopathic stress zone. The data recording and analysis of the different signals can be successfully done in LabVIEW graphical programming environment.

Keywords: Geopathic stress, LabVIEW, Microcontroller, Physiological parameter, Sensor.

I. INTRODUCTION:

Geopathic stress is a natural radiation that rises up through the earth and is disturbed by weak electromagnetic field created by ground water steam, certain mineral concentration, geological fault line and disturbances in the earth magnetic field. It is the general term used for energies emits from the earth which affects certain places and can provide the ability to heal disturbed to the normal functioning of human body. The literal meaning of the word Geopathic describes disturbances in the Earth's natural energy fields, which are believed to negatively impact human health [1]. In olden days, most of our civilization had knowledge about the earth's energy and their effect in human being. However our research findings by scientist lead to numerous investigations about the effect of this energy on human being. This energy is subtle or electromagnetic in nature. Human affected by these radiations due to electric nature of the human body, where everything our body does is through electric signal sent from the brain to all body parts. This creates an electromagnetic field that surrounds each human body and that interacts with the surrounding environments [2]. The effect of geopathic stress on human body parameter is discussed in Table 1.

Table 1: Effect of geopathic stress on human body parameters.

Parameter	Effect	Instrument	Reference
Reaction Time	Reaction time of driver increases	Simple Reaction Time Meter (SRTM)	(Kharat et al., 2000)[3]
Brain function and	Interfacing with brain	Gas Discharge Visualization	(Hacker et al.,

immune system	function and affect the release melatonin a hormone important for immune system	(GDV)	2008)[4]
Heart Rate and Blood Pressure	Heart Rate and Blood Pressure decreases	Scientech Digital BP Meter and BPLCardio art 108T Digi	(Dharmadhikari et al., 2010)[5]
Body Voltage and Skin Resistance	Body Voltage and Skin Resistance decrease	V-20 Bio-volt meter and GSR-2 biofeedback System	(Dharmadhikari et al., 2011)[6]
Sleeping Problem	Sleeping Problem are observed	Self-made data gathering Instrument	(Convocar et al., 2012)[7]
Respiration Rate	Respiratory Rate increases	Six channel multi parameter Caddo 19B Model	(Aghav et al., 2014)[8]
Body Temperature	Body Temperature decreases	Medical Thermal Imaging (MTI)	(Kolekar and Pimplikar, 2023)[9]

After conducting a review of literature, a specific objective has been identified for the current study, is to explore the effect of Geopathic stress on human body using simple and low cost instrumentation system. In present work, microcontroller based instrumentation system was implemented which can easily measure the changes happening in human body parameters. This research work explores the concepts of Geopathic stress, its effects on physiological parameters and the implications of this for the human health.

II. MATERIAL AND METHOD:

A) Architecture of Proposed System:

The block diagram of the proposed system for measurement of body parameters is shown in figure 1. This system contains different types of sensor such as Temperature sensor, ECG sensor and Pulse/ Heart Rate sensor. All these sensors are connected to the Arduino microcontroller board. The Arduino Uno performs the function of DAQ and serves the signals to LabVIEW. These signals are processed through the LabVIEW VIs. The output is displayed in the front panel of LabVIEW.

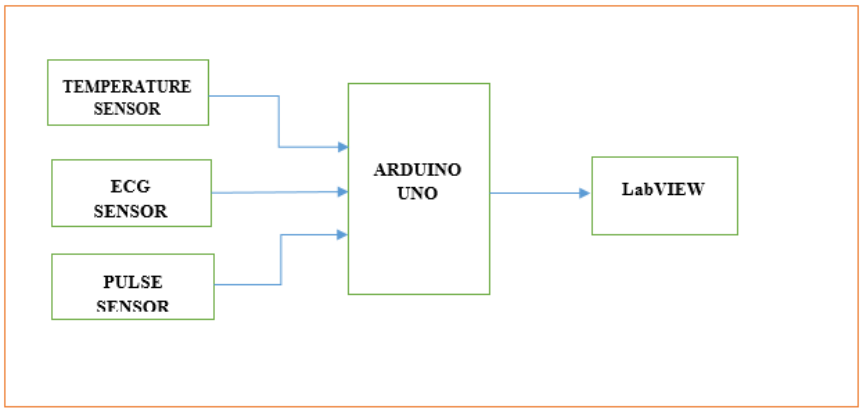

Figure 1: Block diagram of proposed system

B) Hardware Required:

1) **Arduino Uno R3:**

Arduino Uno is a microcontroller based on ATmega328p. A total of 14 digital pins (input/output) are available in which six are PWM pins, six analog input pins, USB connection port, power jack, ICSP header and a reset button. Various other components like voltage regulator, serial communication etc. is also supported by Arduino Uno. The programing is done in Arduino IDE using C or C^{++} [10].

2) Temperature Sensor LM35:

The LM35 series precession integrated circuit. Its low output impedance, linear output and precise inherent calibration. The LM35 directly calibrated in Celsius with an output voltage linearly proportional to the temperature with a gradient of $10mV/^0C$ and able to operate in the range of -55^0C to $+150^0C$ with an accuracy of $+\_0.5^0C$. The LM35 sensor has three terminals, the first terminal is connected to 5 Volts Vcc supply, terminal two is the output terminal Vout and the third terminal connected to ground. The central terminal is that gives the output voltage corresponding to the sensed temperature [11].

3) ECG Sensor Module AD8232:

The ECG sensor module AD8232 has been used for recording the electrocardiogram. The AD8232 is an incorporated signal conditioning block for ECG and different bio capability size application. It is design to extract and amplify small bio capability indicators in the presence of noisy conditions [12].

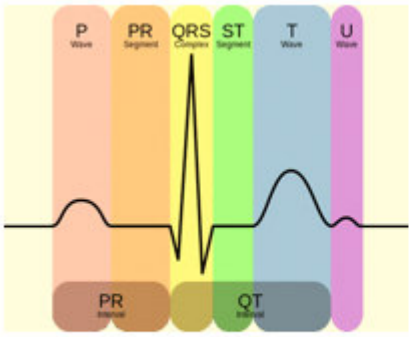

Figure 2: Normal ECG Waveform

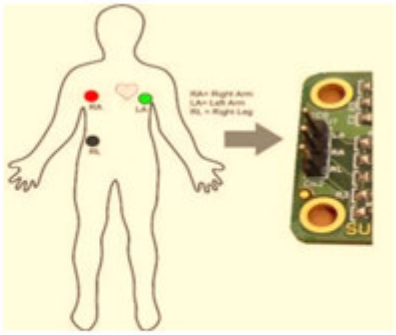

Figure 3: Lead Position

ECG recording the electrical interest of the heart over a period of time using electrodes located at the skin. An electrode is a conductive pad in touch with the body that makes an electrical circuit with the electrocardiograph. Lead I, II, and III are known as the limb leads. Lead is a connector to an electrode. The electrodes that form those alerts are located on the limbs, one on every arm and one at the left leg based on Einthoven triangle. ECG sensor module senses the electrical activity of heart muscles, generated due to contraction and relaxation of the heart muscles.

4) Pulse Sensor:

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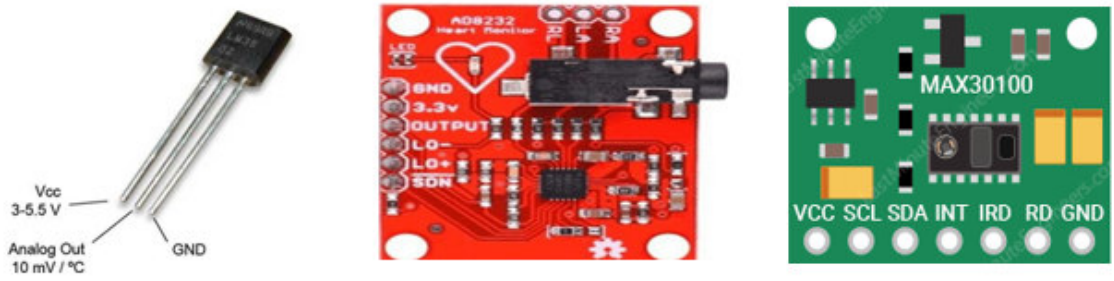
The MAX30100 is an integrated heart rate monitor and pulse oximetry sensor solution. Pulse oximetry is the non-obtrusive component of the oxygen immersion (SpO_2). Oxygen immersion is characterized as the estimation of the measure of oxygen broke down in view of the detection of Hemoglobin and De-oxy hemoglobin. Deoxygenated hemoglobin (Hb) has superior assimilation at 660 nm (red light spectra) and oxygenated hemoglobin (HbO_2) has higher ingestion at 940 nm (infrared gentle spectra) [13].



(a) (b) (C)

Figure 4: Sensor Modules: (a) Temperature Sensor, (b) ECG Sensor, (c) Pulse Sensor

C) Software Requirement:

Two software is used in this research work: Arduino IDE and LabVIEW.

i) Arduino IDE:

The Arduino Integrated Development Environment (IDE) is a cross-platform application that is written in the programming language Java. Arduino IDE is used to write and upload programs to the Arduino board. It supports the languages C and C++. The Arduino IDE is important to interface Arduino Uno board with LabVIEW software [10].

ii) LabVIEW:

LabVIEW (Laboratory Virtual Instrument Engineering Workbench) is a system design platform and development environment for a visual programming language from National Instruments. LabVIEW is an interactive programming environment in which programs can be created using a graphical notation. The programming language used in LabVIEW is a dataflow programming language in which the execution is determined by the structure of a graphical block diagram. The additional feature of LabVIEW is that, it includes extensive support for interfacing various devices and instruments [14]. Different programming tools and drivers are present in the software which helps in reducing time and effort in writing program.

III. Interfacing Using LabVIEW:

Arduino microcontroller is interfaced with LabVIEW through the LIFA (LabVIEW Interface for Arduino) or LINX. It is an open source software and provides an easier way to use the LabVIEW VIS for interfacing common embedded platforms like Arduino, ChipKIT and MyRIO with LabVIEW. Using the peripheral VIs in LINX, the digital I/O, analog I/O, SPI, I2C, PWM and UART of the platforms can be accessed.

Arduino board simply connected to a computer where LabVIEW platform is installed with a USB cable. Using LIFA or LINX the Arduino board interfaced to LabVIEW. After interfacing the sensors with Arduino, dump the Arduino and LabVIEW interfacing firmware file on the

Arduino board to make the board ready for LabVIEW programming [15]. After dumping this file open the new VI for making the GUI.

IV. DATA ACQUISTION AND PROCESSING OF PHYSIOLOGICAL PARAMETERS:

The data acquisition system provides an interface to acquire the sensors data through Arduino and process it on the LabVIEW platform.

1) Body Temperature:

LM35 temperature sensor has been widely used for measuring the body temperature. The temperature sensor data connected to analog pin of Arduino board. The output voltage is converted to corresponding temperature readings using numeric pallets in LabVIEW. The normal human body temperature can range from 97.8 ^{0} F (or 36.5 ^{0} C) to 99 ^{0} F (or 37.2 ^{0} C) for a healthy adult. Normally body temperature varies depending on gender, recent activity and day time. Body temperature may be abnormal due to fever as high temperature or hypothermia as low temperature. If the temperature exceeds above and below the normal temperature the abnormal red LED will blink.

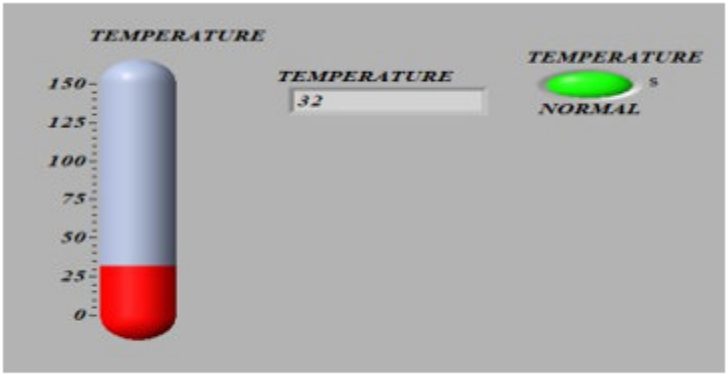


Figure 5 Measurement of body temperature

2) SpO2 Sensor:

MAX30100 is a sensor that is used to capture the oxygen level of the blood and heartbeat. It has two LED's namely emitting red light spectra and emitting infrared light spectra. For measuring the pulse rate only infrared light is needed and for measuring the blood oxygen level both light is needed. The blood oxygen level indicates the oxygen level present in blood and the normal oxygen level for the human is between the 95% and the 100%.

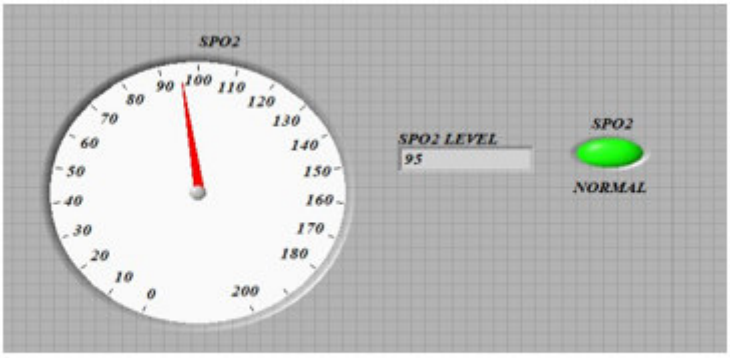


Figure 6: Measurement of SpO2

3) Electrocardiographs (ECG Sensor):

An Electrocardiograph is a device that is used to perform electrocardiography and produces the Electrocardiogram. Electrocardiogram (ECG) is the most effective and efficient tool in diagnosis and monitoring of patients with cardiac disorders. ECG can be used to measure the rate and rhythm of heartbeats. The normal heart rate for the human being is 75 beats per minute and for healthy adults ranges from 60 to 100 beats per minute (BPM). The heart beat will be more while running and while getting angry. The AD8232 module has nine connections from the IC. SDN, LO+, LO-, OUTPUT, 3.3V, GND offers vital pins for operating with an Arduino. Additionally, RA (Right Arm), LA (Left Arm), and RL (Right Leg) pins are supplied on this board. The LO+ and LO- pins are connected to the digital pin 11 and 12 of the Arduino.

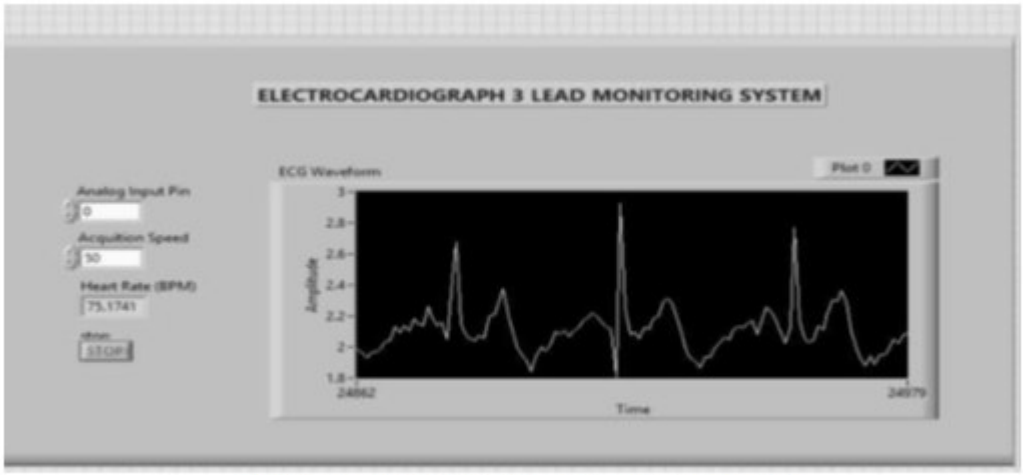


Figure 7: Real Time Data Monitoring System

V. RESULT AND DISCUSSION:

A proposed system is used to detect variation in the human body parameters. A real-time multisensory system has been developed, capable of measuring physiological parameters such as body temperature, ECG, heart rate and blood oxygen saturation level. The presented proposed system is inexpensive, easy to handle and can be used for scientific investigation of analyze the effect of Geopathic stress on human body. Such locations are very harmful to living and non-living systems. With the methods used in our study, the data recording and analysis of the different signals can be successfully done in LabVIEW graphical programming environment.

VI. CONCLUSION:

In this paper, LabVIEW graphical programming platform provides an efficient environment to process and keep track of various physiological parameters like body temperature, ECG, heart rate and blood oxygen saturation level in real time under Geopathic stress.

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REFERENCES:

1. Dubrov, A. P., "Geopathic zones and oncological diseases." Druskininkai, Lithuania, 2008.
2. Freshwater, D., "Geopathic Stress." *Complementary Therapies in Nursing & Midwifery*, vol. 3, no. 6, 1997, pp. 160-162, doi:10.1016/s1353-6117(5)81003-0.
3. Saunders, T., "Health hazards and electromagnetic fields." *Complementary Therapies in Nursing & Midwifery* 9, 2003, 191-197.
4. Kharat, A. G., "Emprical and Theoretical Investigation on Built Environment." *PhD thesis SPPU Pune*, 2000.
5. Hacker, G. W., Eder, A., Augner, C., and Pauser, G., "Geopathic stress zones and their influence on the human organism." *Proceeding of the Druskininskai Congress on Earth's Fields and Their Influence on Human Beings*. 2008, pp. 8-17.
6. Dharmadhikari, N. P., A. G. Kharat, et al. "Effect of Geopathic stress on Human Heart Rate and Blood Pressure. " *Indian Journal of Science and Technology*, Vol. 3, No. 1, 2010, pp. 54-57.
7. Dharmadhikari, N. P., D. C. Meshram, et al. "Effect of Geopathic Stress on Human Body Voltage and Skin Resistance." *Journal of Engineering and Technology Research*, vol. 3, no. 1, 2011, pp. 255-263.
8. Convocar, Jeremias L. "Common Sleeping - Related Problems and Illnesses of Persons who stayed within Geopathic Stress Zone." *JPAIR Multidisciplinary Research Journal*, vol. 10, no. 1, 2012, pp. 108-128.
9. Aghav, S. D., P. S. Tambade., "Investigating Effects of Geopathic Stress on Health Parameters in Young Healthy Volunteers." *International Journal of Chemical and Physical Sciences*, IJCPS, Vol. 4, 2015, pp. 28-34.
10. Kolekar, D., S. Pimplikar., "Exploring the Impact of Geopathic Stress on Human Body Temperature and Road Accidents: A Comprehensive Investigation." *International Journal of Applied Engineering & Technology*, vol. 5, no. 4, 2023, pp. 1461-1468.
11. www.arduino.ac
12. Agham, N. D., V. R. Thool, "LabVIEW-Based Physiological Parameters Monitoring System for Patient Healthcare" *International Journal of Engineering Research & Technology (IJERT)* Vol. 3 Issue 2, February – 2014 ISSN: 2278-0181.
13. Kiruba Nandhini1. K, Vidya. M, "Design of Cost-Effective ECG Signal Acquisition System", *International Journal of Innovations in Engineering and Technology*, Volume 12 Issue 2 January 2019.
14. Mohan Lal Sahu, Jigyasu Kumar Kaushal.(2017), "Real time health monitoring system using Arduino and LabVIEW with GSM Technology", *International Journal of Advance Engineering and Research Development*, ISNCESR 2017, March-2017

15. Bheema lingaiah, T., D. Hanumesh Kumar, C. Nagaraja.(2013), "Measurement of Pulse rate and SPo2 using Pulse Oximeter developed using LabVIEW" IOSR Journal of Electrical and Electronics Engineering (IOSR-JEEE) e-ISSN: 2278-1676,p-ISSN: 2320-3331, Volume 8, Issue 1 (Nov. - Dec. 2013), PP 22-26
16. Rangayyan, R.M., "Biomedical Signal Analysis a Case study Approach," IEEE Press, 2005.
17. Channappa Bhyri, Kalpana.V, S. T. Hamde, and L. M. Waghmare.(2009), "Estimation of ECG features using LabVIEW" *TECHNIA – International Journal of Computing Science and Communication Technologies*, VOL. 2, NO. 1, July 2009. (ISSN 0974-3375).
18. Deepak Yadav, Kartik Kaul, Aman Sharma, Prof. (Dr.) Janak kumar B. Patel, Manoj Pandey.(2018), "Real time ECG monitoring system Using Arduino and LabVIEW", *JETIR* May 2018, Volume 5, Issue 5