

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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IDT Project Report(1BIDTL158)

on

“POSTURE CORRECTING CUSHION USING SENSOR”

Submitted in partial fulfillment of the requirements for the
First Semester of the Bachelor of Engineering Degree, towards the completion of the IDT
Project under the **Innovation & Design Thinking Laboratory**,
Department of Basic Sciences.

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CERTIFICATE

This is to certify that the File Structures IDT project entitled "**POSTURE CORRECTING CUSHION USING SENSOR**" has been successfully carried out by Nandya R(1CR25IS104), Manutha R(1CR25IS097), Meghana Sharma (1CR25IS097), Kavya Shree CN (1CR25IS073), Kanika Handa(1CR25IS071) and Priyanshi Awasthi(1CR25IS120), bonafide students of **CMR Institute of Technology**.

The project is submitted in partial fulfillment of the requirements for the First Semester of the Bachelor of Engineering Degree, towards the completion of the IDT Project under the **Innovation & Design Thinking Laboratory, Department of Basic Sciences**.

It is further certified that all corrections and suggestions indicated during the Internal Assessment have been duly incorporated in the project report submitted to the departmental library. This File Structures IDT project report has been reviewed and approved as it satisfies the academic requirements prescribed for the said degree.

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ACKNOWLEDGEMENT

I sincerely express my gratitude to **Dr. Sanjay Jain**, Principal, CMR Institute of Technology, Bangalore, for providing a supportive academic environment.

I extend my thanks to **Dr. Raveesha K H, HoD, Dept. of Physics, CMRIT** for his valuable guidance and support.

I am especially grateful to my internal guide, **Jayashree M**, Assistant Professor, Department of Information Science and Engineering, for her/his constant encouragement and guidance throughout this project.

I also thank all the faculty members, non-teaching staff, and others who contributed directly or indirectly to the successful completion of this work.

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Abstract

In today's world, poor posture has become a widespread issue due to the increasing amount of time people spend sitting at desks, using computers, or engaging with mobile devices. This prolonged sedentary behaviour often leads to slouching, forward head posture, and misalignment of the spine, which in turn causes back pain, neck strain, and long-term musculoskeletal problems.

The prototype of the posture-correcting cushion is designed to combine comfort with intelligent monitoring. At its core, the cushion is ergonomically shaped to support the natural curves of the spine, ensuring that users can sit for extended periods without discomfort. Embedded within the cushion are sensors—such as infrared, pressure, or touch sensors—that continuously monitor the user's sitting posture. These sensors are connected to a microcontroller, typically an Arduino board, which processes the input data and determines whether the posture is correct or incorrect. When the system detects poor posture, it activates a feedback mechanism, such as a buzzer or vibration motor, to alert the user immediately. This real-time feedback encourages the user to adjust their position, thereby promoting healthier sitting habits. The prototype is powered by a compact circuit integrated within the cushion, designed to be lightweight and unobtrusive so that it does not interfere with the user's comfort. The cushion's outer material is chosen for durability and aesthetics, making it suitable for everyday use in classrooms, offices, or homes. Overall, the prototype demonstrates how sensor-based technology can be seamlessly embedded into a simple cushion to create a practical, affordable, and user-friendly solution for posture correction. It serves as a proof of concept that merges ergonomics with electronics, highlighting the potential of smart furniture in improving health and productivity.