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## **Press Release**

**IIT (ISM) team of faculty members and students develop a device to control the medicals in hospital through the EEG signals generated by brain of bed ridden patients; newly developed device to reduce the staff requirement and expenditure load of hospitals**

A team of researchers of IIT (ISM) led by Zafar Alam an Assistant Professor of Mechanical Engineering Department has developed a system to control the pneumatic medical beds through Electroencephalography (EEG) signals. The move is aimed to help paralytic/severely affected patients to control the position of their pneumatic medical beds by the brain through Electroencephalography (EEG) device. The system developed as part of project worth around Rs 2 Lakh of the Institute fund, NVCTI as well as personal fund is commercially viable compared to available ICU beds.

The research team comprising of others, including B Tech Final Year students, Manmohan Labh, Yalla Mark Vishal and Inampudi Sai Amit besides research scholar, Ashish Siddharth which completed the project between August 2021 and May 2022 and later also filed the patent application claims that the system developed by them will help of ensure efficient medical governance by reducing the nursing loads for patients at health centres/hospitals.

Explaining about the difficulties faced by some patients which prompted them for develop the system, Prof Alam said, "With the rise in accidents and paralytic attacks worldwide and consequent rise in disabilities, many patients are restricted to beds in such condition where self-lifting the bed seems to be an unachievable task"

"The thought behind the project is to enable the paralytic, bedridden person to control or move and fix their medical beds without the requirement of any physical effort" added Alam.

Elaborating about the technicalities, Prof Alam said "The brain sends the signal in the human body in form of small impulses of currents and spikes, which are also known as Electroencephalography signals through the network of neurons and nervous systems".

"A study of these signals has been carried out to analyse a person's thoughts and then with aid of machine learning, a trained model was obtained to recognize whether the patient wants to lift the bed up or down" elaborated Alam.

"The developed model controls a pneumatic actuated medical bed to the desired position" further said Alam and added that these pneumatic actuators use air as a fluid medium and due to its attribute of compressibility, a cushioning effect is generated that creates an additional advantage to the system.

Justifying the development of the system and its further deployment in the hospital, he said, "For such severely affected patients who can't move on their own, continuous nursing of their condition is required which increases the load on health fa and also escalates the cost of medical governance.

Therefore, the aim project is to develop a system or device to to control the pneumatic medical bed through electroencephalography signals of the brain by the



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paralytic patients, which is capable of controlling the movement of the medical bed through powered by a pneumatic cylinder by the patient's brain.

Using a pneumatic cylinder based medical bed is not only cheap but also has the added advantage of providing cushioning effect during it's motion due to virtue of compressibility of air.

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