



PSG College of Technology

ACADEMIA TO INDUSTRY TECHNOLOGY TRANSFER

OF PRODUCTS DEVELOPED BY PSGCT UNDER THE SUPPORT OF
DEPARTMENT OF SCIENCE AND TECHNOLOGY, GOVT. OF INDIA

23rd June, 2017

Chief Guest

Dr. Neeraj Sharma

Head, Technology Development & Transfer Division, DST, New Delhi



CAP BASED WIRELESS COMMUNICATION SYSTEM FOR MULTICHANNEL EEG RECORDER



TECHNOLOGY TRANSFER

**PSG College of Technology
Coimbatore**

*hereby transfers the Technology for the
"Wireless EEG System" prototype*

To

**STEPS Knowledge Services Pvt. Ltd.,
Coimbatore**

Design and development by: ECE Department
PSG College of Technology, Coimbatore

Funded by: IDP, DST, TDP, Government of India



23rd June 2017

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PRINCIPAL
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Electronics and Communication Engineering Department, PSG College of Technology

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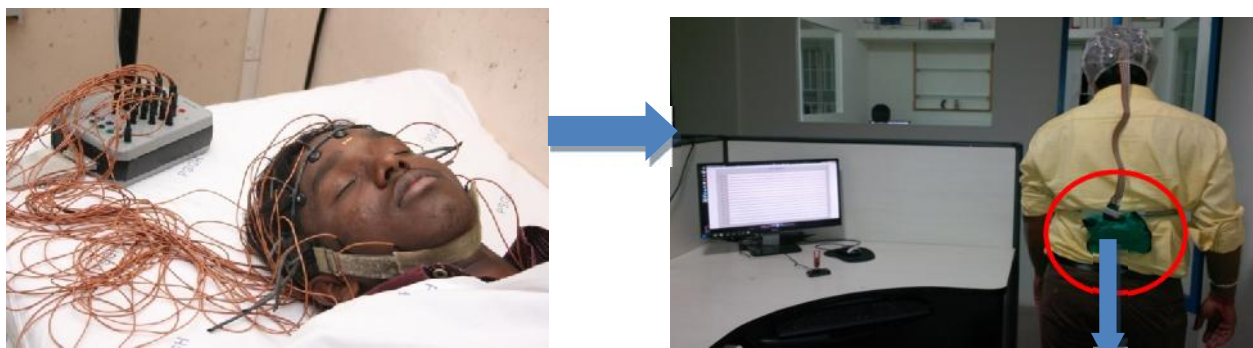
Mr. V.S.RAMESH

Mr. B. SHANMUGA SUNDARAM

Traditionally, the multi channel EEG recorders used in hospitals usually includes multiple wires connecting sensors and the monitoring device as shown in Figure. The conventional wired EEG recording adopts a wired serial port interface, such as RS-232C standard, to transmit the measured EEG signal, and is inconvenient because of the transmission lines between the instrument and human brain activity measuring device. As a result, they often limit the patient's movement, and such systems are thus impractical for real world use. Also when the conventional EEG acquisition equipment is intended to transfer to a portable device, such as personal digital assistant (PDA), wired transmission always caused inconvenience in mobilization.

The idea for the design of WIRELESS EEG SYSTEM is coined by the Department of Electronics and Communication Engineering, PSG College of Technology Coimbatore, funded by Department of Science and Technology, Government of India and developed by the Department of Electronics and Communication Engineering in collaboration with STEPS Knowledge Services Pvt Ltd Coimbatore.

The main objective of this research is to design and develop Cap based EEG acquisition system for acquiring the brain signals and to communicate the same wirelessly to the patient control device for monitoring and external communication.



Wearable EEG Module

Product Innovation:

- No movement artifacts could be observed
- Disposable low cost cap with electrodes
- Mobility enhanced; an added advantage, specifically when measurement is taken for Children, Elderly persons and Psychiatrist patients
- Existing 24 channels can be expanded in multiples of 8
- The overall cost of the system under volume manufacturing is estimated at INR 75000 compared to the imported system of INR 10 Lakhs. Disposable cap is designed with the cost of INR 350 compared to the imported cap of INR 25000.

Design and Development of low cost intelligent wheelchair for severely disabled /old people



TECHNOLOGY TRANSFER

**PSG College of Technology
Coimbatore**

*hereby transfers the Technology for the
"Intelligent Wheel Chair" prototype*

To

**STEPS Knowledge Services Pvt. Ltd.,
Coimbatore**

Design and development by: Biomedical Engg. Department

PSG College of Technology, Coimbatore

Funded by: IDP, DST, TDP, Government of India



23rd June 2017

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First wheelchair model evolved long back in 18th century, but rapid development in this field initiated since mid of 20th century. Since then, many varieties of models had been designed, extending into broad range of products. This project involves the design of an ergonomically designed electric wheelchair for domestic use by Indian old aged or severely disabled people. Wheelchairs with embedded intelligence are a mobility aid especially suitable for severely motor and/or cognitively impaired people that have difficulties in driving standard powered wheelchairs. There are some limiting factors of conventional motorized wheelchair, to overcome the disadvantages of this conventional method, we are developing a **low cost intelligent wheel chair for severely disabled / old people by providing options of controlling the wheel chair using Joy stick, EMG (Muscle) signal, Bluetooth and Mobile Phone based wireless control (for attender) with obstacle detection sensor.**



Conventional wheel chairs have Joystick for controlling the wheelchair movement. In the Intelligent Wheelchair Electromyography (EMG) signal is used to control the navigation which helps paralytic patients move independently. According to Dr.V.Ramamoorthy and Mr.A.Parthiban of PSG Hospitals, this will reduce their depression. If there is an attender to assist the wheelchair patient, the Bluetooth technology will enable the attender to stay at his place and control wheelchair movement. This reduces the burden of staying with the patient for a long time. Indigenously developed wheel chair has in built battery with the battery charger circuit and designed for 12 hours of continuous operation without recharge. The entire technology is developed at a very affordable cost.