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LEADERS OF CHANGE Independence Day Special

Transforming Healthcare Technology for Rural India

By creating portable, battery-operated, and affordable medical technology solutions that can be delivered via mobile technologies and portable battery-operated solutions, ITIE Knowledge Solutions seeks to eliminate the imbalance in access to healthcare facilities in rural areas

> Rural areas comprise 70–75 percent of the total Indian population, and healthcare accessibility is still an issue even with instances of at least one mobile device in each household. We at ITIE Knowledge Solutions intend to erase this disparity by developing portable, battery-operated, and cost-effective medical technology solutions that can be delivered via mobile technologies and portable battery-operated solutions.
>
> – DR SANJEEV KUBAKADDI
> Founder, ITIE Knowledge Solutions

EASY ACCESS TO HEALTHCARE SOLUTIONS

Enabling easy access to healthcare solutions for rural communities is iMedilogger, a gem from ITIE's suite of products. It is a compact, portable, battery-operated multi-channel, multi-parameter data acquisition product which includes a 4-channel EMG and 1-channel ECG monitoring system. It is powered using a 3.7V Li-Ion battery and software and transmits data via Radio Frequency (RF) signals, thus eliminating the need for a proper network connection that would be difficult to achieve in rural areas. "The data acquired from iMediLogger is encrypted before transferring to the doctor's mobile and only the prescribed app can decrypt it. Additionally, the caregiver can view patient vitals on his mobile device thus being in constant touch with the patients," says Dr Sanjeev Kubakaddi. Dr Sanjeev believes that once this endeavour is completed, iMediLogger will transform the medical landscape in rural areas. Moreover, the Real-Time Data Acquisition and Analysis services that the company proffers informs the caregiver on the specific issue that the patient is suffering from.

PORTABLE DIGITAL X-RAY MACHINE

ITIE Knowledge Solutions launched a portable digital X-Ray machine, in collaboration with a Korean company called HDT. This machine, equipped with Artificial Intelligence (AI), can help doctors monitor Tuberculosis (TB), Covid-19, and any chest-related infections and diagnose early infections in patients.

Tuberculosis, Covid-19, and other respiratory diseases in humans can be diagnosed using this solution and it will be very helpful to do large-scale scanning. Their Digital X-Ray machine, which works with AI algorithms, detects the Pneumonia percentage level of the patients more simply without much difficulty. The portable Digital X-Ray device can be used inside hospitals without the need of a dedicated 'dark' room, it can be used in ambulances and outdoors making it very convenient for the authorities to detect TB and pneumonia in patients more easily and cost-effectively.

The device is lightweight (weights about 1.8 kg) and battery-operated. Once the X-Ray is taken by the machine, it will send the report via WhatsApp or email or to the Radiologists directly in three seconds.

SMARTBCI SUPPORTS THE FOLLOWING APPLICATIONS

1. Brain-Computer Interfaces
2. Peak Performance in Sports
3. Event Related Potentials (P300, SSVEP)
4. Quantitative EEG (qEEG)

You simply wear it on your body just like you put on a watch or a sports bracelet on your hand.

NEUROLOGY PRODUCTS – SMARTBCI

SmartBCI family includes multichannel professional-grade wireless and wearable EEG amplifiers, accessories, and an advanced software package ready for neuroscience research.

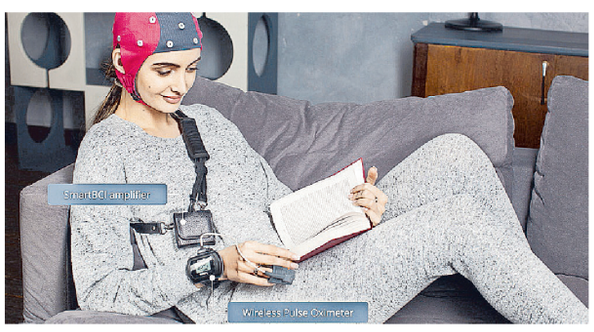
BRAIN-COMPUTER INTERFACE (BCI) WITH VIRTUAL REALITY (VR)

Neural control is a means of communication between humans and the surrounding digital world, in which commands are given to a computer directly from brain signals without any input devices. ITIE's technology applies a non-invasive approach, which means that the device does not need to be implanted.

HOW THE TECHNOLOGY WORKS?

There are a large number of methods for working with impulse responses of the cerebral cortex. 99% of non-medical devices on the BCI market are using biofeedback. This method does not allow using neural interfaces extensively, as it has several technical limitations.

The team followed the road less travelled and developed algorithms that allow operating based on evoked brain potentials. the neural networks are trained in such a way that the user does not need to learn how to work with the neuro-headset, unlike 99% of devices. And as early as the second use of the device, artificial intelligence maximises the impulse recording accuracy. This system enables you to perform up to 8 different actions per unit of a digital image, while 99 % of similar devices barely perform 2-3 actions.



ITIE ACADEMY

Incepting the ITIE Academy

>> Having faced the lack of skilled technical labour during the company's onset, Dr Sanjeev and his wife Samrita put together their heads to come up with a solution. "The technical education in India is not satisfactory and while interviewing candidates, we realised that they did not have the technological acumen. This led us to set up the ITIE Academy," says Samrita Kubakaddi, Head of ITIE Academy.

>> ITIE Academy focuses on domain-specific, application-specific training ranging from Biomedical Signal, Image Processing, Mathematical Modelling and Simulation for Automotive, Aerospace applications, Python, JAVA, .NET, Web Applications, Android, iOS application developments, Embedded Technology, and so on.

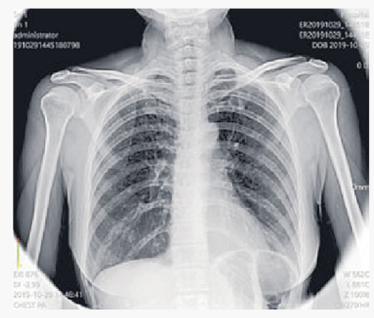
>> ITIE Academy gets students, and professionals from more than 22 countries and 70 global universities including top-notch universities and Fortune 500 companies.

>> Working with different R&D institutions, defence labs, and other educational institutions for biomedical solutions and research activities, ITIE Knowledge Solutions is adept at capturing the nuances of the biomedical needs of the country. Additionally, the company has been urging the Government of India to set up a dedicated certifying institution that provides strict standards and guidelines thus enabling the Indian healthcare companies to compete in the global market with their products.

TRANSFORMING HEALTHCARE TECHNOLOGY FOR RURAL INDIA

- 8/24/32 channel wireless amplifier
- Synchronization with eye tracking
- Lab Streaming Layer outlet and inlet
- Data streaming to iMotions application
- Public SDK for developers

PORTABLE DIGITAL X-RAY MACHINE
for TUBERCULOSIS (TB), COVID DIAGNOSIS



BRAIN COMPUTER INTERFACE (BCI) WITH VIRTUAL REALITY (VR)

neurointerfaces
eegsystems

VirtualReality

iMediLogger

Multichannel, Portable, Battery Operated ECG, EMG, Respiration Rate & SpO2 Data Acquisition System

itie
KNOWLEDGE SOLUTIONS

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