SERB Sponsored One Day Workshop on

Biomedical Signal and Image Processing

Under SERB Scientific Social Responsibility (SSR) Policy

November 23, 2024

About the Institute:

The foundation of the Indian Institute of Technology (Banaras Hindu University) can be attributed to Mahamana Pandit Madan Mohan Malviya, Bharat Ratna, who established the Banaras Hindu University, the first residential university in modern India. In 1968, the three engineering colleges of BHU, namely BENCO, MINMET, and TECHNO, were merged to create the Institute of Technology (IT-BHU) with the aim of providing a comprehensive educational platform. In recognition of its excellence, IT-BHU was renamed IIT (BHU) on June 29, 2012, through an Act of Parliament. IIT (BHU) Varanasi has been highly regarded in national rankings. The institute offers a four-year Bachelor of Technology program, five-year Integrated Dual Degree programs, and various postgraduate programs.

About the Department:

The Department of Electronics Engineering was established in 1971 as a branch of the Electrical Engineering Department. The department maintains close collaborations with esteemed national research and development laboratories, leading software companies, and foreign universities in key areas such as wireless communications, signal processing, and microelectronics.

About the Workshop:

A signal is a function of one or several variables that carries useful information. A signal is said to be biological if it is recorded from a living system. It means biomedical signals are recordings of physiological activities of organisms, ranging from to neural and cardiac rhythms, to tissue and organ images. Electrocardiogram (ECG), electroencephalogram (EEG), electromyogram (EMG) and various sensory evoked potentials are a few examples of such bioelectric signals. Usually, signals are functions of time, but this is not necessarily so as the case of radiological images. This implies signals can be either one-dimensional, if they depend on a single variable such as time, or multidimensional if they depend on several variables such as spatial coordinates. These signals carry meaningful information about the structure and functioning of associated underlying biological source. However, these signals are very fibble and difficult to interprete in the presence of noise. So, biomedical signal processing is often used to extract hidden features which are not explicitly available from the signal through visual inspection.

Medical image processing had grown to include computer vision, pattern recognition, image mining, etc. A massive quantity of data is placed on different data sources such as radiological imaging, genomic sequences, as well as pathology imaging. So, it is very important to turn all this information into usable data. This task is catered by deep learning techniques which are assisting to identify, classify, and quantify patterns in clinical images. Deep learning has revolutionised image processing. For specific biomedical image analysis tasks such as image segmentation and classification, deep learning algorithms now achieve higher accuracy than trained experts and outperform humans at data processing speed and prediction consistency. However, machine learning algorithms are mostly developed to solve one specific problem. This workshop will cover some of these topics and it will be helpful for those who are working or willing to work in this domain.

Who can attend:

Faculty members (nearby colleges) working in the area of Signal Processing/ Image Processing and allied subjects

Certification: Attendees will be given E-certificate.

Registration Details:

There is no registration fee.
However, **online registration deadline is November 20, 2024.**

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This workshop offers a valuable platform for participants to gain insights and knowledge regarding the opportunities and challenges involved in biomedical signal and image processing. Deep learning methods for biomedical image classification will also be covered in this workshop.

Venue: Department of Electronics Engineering, IIT (BHU), Varanasi

Workshop Coordinator:
Dr. Kishor Sarawadekar, IIT (BHU) Varanasi, India

Email: skishor.ece@iitbhu.ac.in

For registration visit:
https://forms.gle/sbqYh1oujBrsRH6b8

Scan to register

Acknowledgement: