JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY

(Established by H.P. State Legislature vide Act No. 14 of 2002)

Dr. Narayan Panigrahi

(Scientist-'G', Group Head GIS Center for Artificial Intelligence & Robotics Bangalore)

"Brain-Computer Interface through interpretation of EEG data"

May 15, 2023

Dr. Narayan Panigrahi, Fellow IETE, has received PhD from Indian Institute of Technology (IIT), Bombay, MTech (Computer Science and Data Processing) from IIT, Kharagpur, MSc (Computer Science) from J K Institute of Applied physics and Technology, University of Allahabad in the year 2012, 1999 and 1991 respectively. He is the recipient of Governor's

gold medal and best graduate of Berhampur University, Odisha in the year 1987. He has received the National Science Day Medallion and Certificate in the year 2008. He has authored 78 research papers, seven patents and seven books in the field of Geographic Information Science and System (GI Science and GIS). Two of his research papers are adjudged for best research award by INRIA, France and IEEE. The books entitled "Geographical Information Science" and "Computations in GIS" are some of his noteworthy academic works used in the academic curriculum worldwide. At present he is pursuing his research in the Center for Artificial Intelligence and Robotics (CAIR), a laboratory of Defence Research and Development Organization (DRDO) in Bangalore, India. His research interest includes GI Science and System, Digital Image Processing and design and development of robust computational methods in Spatio-Temporal data visualization and analysis. He is conferred with "National award for Geospatial Excellence" by Indian Society for Remote Sensing (ISRS) in 2019 and "Agni Award for Excellence in Self Reliance" in the year 2019 by DRDO.

He talked about the Brain-Computer Interface through interpretation of EEG data. He explained that BCI comprises of four distinct steps viz. (a) Neuro-imaging for acquisition of the digital signal emanating from the brain, (b) Processing of the neuro-image data for isolating various characteristic features of the brain (c) Classification and mapping of the features to understand the intended motif and actions (d) Interfacing the action to the device or computer to perform the intended actions. In his talk he explained some signal processing methods to extract the Blink, Saccade and Fix artifacts from the EEG signal obtained from different subjects. Further he discussed about the proposed design for building a low cost yet robust EEG acquisition system which has all the elements from acquisition of the EEG to its processing and visualization. Some of the interesting applications derived by processing the EEG and EoG signal were discussed to make the lecture more interesting.

He delivered a keynote speech to the audience on **May 15, 2023** at 11:45 am to more than 50 participants. Participants carefully listened to his address and also came forward with their queries and discussions.

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Coordinators : Prof. Shruti Jain, Dr. Vikas Baghel, Dr. Pardeep Garg, Dr. Himanshu Jindal, Dr. Nishant Sharma, Dr. Sunil Datt Sharma.