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Joined the Institute in July 2016

## About

I am working as an assistant professor in the Department of Electronics and Communication Engineering at Indian Institute of Information Technology Guwahati since July, 2016. I have completed my BE, Mtech and PhD from Jadavpur University, IIT Kharagpur, and IIT Kharagpur respectively. My doctoral research was on diffuse optical tomographic reconstruction and its applications. My current research focus is on Optical Imaging and Image Processing.

## Research Interests

Image Processing, Optical Imaging, Biomedical Optics, Computer Vision.

- ➊ Image Processing
- ➋ Optical Imaging
- ➌ Biomedical Optics
- ➍ Computer Vision

## Sponsored Research Projects

- ➊ To establish a low-cost, portable telepathology lab to perform routine microscopic tests in rural areas towards the improvement of healthcare system, funded by Department of Biotechnology (DBT), Government of India, 2018-19 (1.5 years).
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## Teaching

- ➊ Image Processing (EC441)
- ➋ Measurement and Instrumentation (EC481, EC281)
- ➌ Digital Signal Processing (EC243)
- ➍ Pattern Recognition and Machine Learning (EC442)
- ➎ Pattern Recognition and Machine Learning (EC442)

## Publication

### Conference

- ➊ R. Patra and B. Sharma, "Characterization of Breast Tumor Biopsy Samples using Texture Analysis", National Conference on Advances in Microscopy and Foldscope, MNMIT, Allahabad, India, March 15-16, (2019).
- ➋ R. Patra and P. K. Dutta, "Estimation of a-priori using Photon Measurement Density Function to Improve the ill-posedness of Diffuse Optical Tomography Reconstruction", International Conference on Systems in Medicine and Biology (ICSMB-IEEE), Kharagpur, India, January 4-6, (2016).
- ➌ R. Patra and P. K. Dutta, "A Partial Reconstruction Scheme for Continuous Wave Diffuse Optical Tomography with Reflection Geometry", IEEE EMC 2015, Milan, Italy, August 25-29, (2015), pages. 7047-7050.
- ➍ R. Patra and P. K. Dutta, "Estimation of Inclusion Location in DOT Using Neural Network", National Conference on Medical Informatics and Telemedicine, IIT Kharagpur, India, (2013).
- ➎ R. Patra and P. K. Dutta, "Improved DOT reconstruction by estimating the inclusion location using artificial neural network", Physics of Medical Imaging - SPIE Medical Imaging, Florida, USA, February 9-14, (2013).
- ➏ K. Basak, R. Patra, M. Manjunatha, P. K. Dutta, "Automated Detection of Air Embolism in OCT Contrast Imaging: Anisotropic Diffusion and Active Contour based Approach", International Conference on Emerging Applications of Information Technology, Kolkata, India, November 29 - December 1, (2012).
- ➐ A. Kumar, R. Patra, M. Manjunatha, J. Mukhopadhyay, A.K. Majumdar, "An Electronic Travel Aid for Navigation of Visually Impaired Persons", COMSNETS, (2011), pages. 1-5.
- ➑ R. Patra, K. Basak, C. Chakraborty, "CADLID: Pattern Classification Approach to Computer Aided Diagnosis of Liver Disease", Fifth Innovative Conference on Embedded Systems, Mobile Communication and Computing (IICEMC2) 2010, PESIMSR, Kuppam, India, (2010).

### Journal

- ➊ N. Singh, A. Prince, S. Chattopadhyay, R. Patra, B. Mukherjee, "Design of a Real-Time Heart Rate Monitoring System Using Photoplethysmography and Smartphone", INDICON 2018, Coimbatore, India, December 16-18, (2018).
- ➋ A. Kumar and R. Patra, "Driver Drowsiness Monitoring System using Visual Behaviour and Machine Learning", IEEE International Symposium on Computer Applications & Industrial Electronics (ISCAIE 2018), Malaysia, April 28-29, (2018).
- ➌ S. Parida, C. Maiti, Y. Rajesh, K. K. Dey, I. Pal, A. Parekh, R. Patra, D. Dhara, P. K. Dutta, M. Mandal, "Gold nanorod embedded reduction responsive block copolymer micelle-triggered drug delivery combined with photothermal ablation for targeted cancer therapy", Biochimica et Biophysica Acta (BBA) - General Subjects, vol.1861(1), (2017), pages. 3039-3052.
- ➍ R. Patra and P. K. Dutta, "Parametric Reconstruction of Diffuse Optical Tomography using Gaussian Mixture Model and Genetic Algorithm", IEEE Journal of Selected Topics in Quantum Electronics, 22(3), (2016), pages. 58-68.
- ➎ R. Patra and P. K. Dutta, "R. Patra and P. K. Dutta, "Contrast Improvement of Continuous Wave Diffuse Optical Tomography Reconstruction by Hybrid Approach using Least Square and Genetic Algorithm", Journal of Biomedical Optics, 20(7), 075009, 2015.", (2015).
- ➏ R. Patra and P. K. Dutta, "" A Partial Reconstruction Scheme for Continuous Wave Diffuse Optical Tomography with Reflection Geometry"", IEEE EMC 2015, Milan, Italy, August 25-29, (2015), pages. 7047-7050.
- ➐ R. Patra and P. K. Dutta, "Detection of Undesired Inclusion in Optically Translucent Fruits or Other Objects using Noninvasive NIR Technology", Applied Optics, 54(12), (2015).
- ➑ A. Kumar, R. Patra, M. Mahadevappa, J. Mukhopadhyay, A. K. Majumdar, "A. Kumar, R. Patra, M. Mahadevappa, J. Mukhopadhyay, A. K. Majumdar, "An Embedded System for Aiding Navigation of Visually Impaired Persons", Current Science, 104(3), 2013.", (2013).
- ➒ R. Patra, C. Chakraborty, J. Chatterjee, "R. Patra, C. Chakraborty, J. Chatterjee, "Textural Analysis of Spinous Layer for Grading Oral Submucous Fibrosis", International Journal of Computer Applications, 48(22), 33-37, June 2012.", (2012).
- ➓ A. Barui, P. Bannerjee, R. Patra, R.K. Das, S. Dhara, P.K. Dutta, J. Chatterjee, ""Swept-source optical coherence tomography of lower limb wound healing with histopathological correlation", Journal of Biomedical Optics, 16(2), (2011).



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