BIOENGINEERING SEMINAR

at 4:00 PM on May 8th, 2014 (Thursday)
MMCR, Mechanical Engineering

Visualisation for Micro-Neurosurgery: The Way Ahead

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Neurological surgery is a surgical field known for its complexity. Surgery on the brain is difficult in view of the close proximity of abnormal and normal tissue structures. The margin of error is thus narrow. Contemporary neurosurgery is synonymous with microsurgery wherein the surgeon operates in a magnified surgical field using specialised micro-instruments. Following the advent of microsurgery nearly half a century ago, the safety profile of surgeries has dramatically changed. The surgical microscope has evolved from an instrument to be an 'extension' of the surgeon. The practise of micro-neurosurgery requires magnification, accurate depth perception and ideal lines of sight to the operative target. The microscope however has not significantly changed in the past 50 years. Technological advances in several related fields have not been incorporated into operative visualisation. Advances in image processing, lighting, spatial positioning systems, camera systems and control mechanisms have potential applications in neurosurgical visualisation. The presentation aims to familiarise the audience with the basic concepts of visualisation of a neurosurgical operating field, issues noted in the current systems and potential technological advancements.

About the speaker:

Dr Vikas is currently working as an Assistant Professor in the Department of Neurosurgery, NIMHANS. He completed his MCh in Neurosurgery from the Sri Chitra Tirunal Institute for Medical Sciences and Technology. He also holds a DNB degree in Neurosurgery and has completed a fellowship in cerebrovascular surgery. Current research activities include building of a 3-D virtual atlas of the brain and a study on the use of image processing techniques in refining diagnosis in brain tumours. Apart from clinical research, his interests include robotics, artificial intelligence, computational neurobiology and health informatics.