

welcometrust



DBT

INDIA ALLIANCE

Team Science Grant 2023, DBT/Wellcome Trust India Alliance (India Alliance)

Research proposal by a team of researchers (from IISc, IIT Gandhinagar and NIMHANS, Bengaluru) led by Prof. Hardik Jeetendra Pandya, core faculty at DESE and associate faculty at the Dept. of Design & Manufacturing (erstwhile Centre for Product Design & Manufacturing), IISc is awarded the “Team Science Grant” of Rs 9.6 Cr (US \$ 1.16 Million) by the DBT/Wellcome Trust India Alliance (India Alliance). Prof. Manish Arora, associate professor at the Dept. of Design & Manufacturing (erstwhile Centre for Product Design & Manufacturing), IISc is one of the collaborators for this project. (<https://www.indiaalliance.org/news/recentawardees-tsg-crc-sif-cph>)

Grant title: Development of an indigenous imaging-based intraoperative probe for brain tumour delineation

Lead Principal Investigator: Prof. Hardik J Pandya, core faculty at Department of Electronic Systems Engineering (DESE, Formerly CEDT), IISc and associate faculty at Dept. of Design & Manufacturing, (erstwhile Centre for Product Design and Manufacturing) Indian Institute of Science (IISc), Bengaluru (for more information, visit: <https://labs.dese.iisc.ac.in/beeslab/>)

Co-Investigators: Dr Anita Mahadevan & Dr Manish Beniwal (National Institute of Mental Health and Neuro Sciences, Bengaluru); Dr Karla Patricia Mercado-Shekhar & Dr Himanshu Shekhar, (Indian Institute of Technology Gandhinagar)

Summary: The research aims to create a new tool to help neurosurgeons identify brain tumour margins more accurately. This is essential as any residual tumour in the brain after surgery can lead to the recurrence of tumours causing the patient's survival chances to reduce considerably. The brain tumour margin delineation probe combines two imaging techniques: electrical impedance tomography (EIT) and ultrasound. These two techniques give doctors complementary information about the tissue being imaged, providing a clearer picture of the tumour location. The EIT system being developed for this probe will be able to image the surface of the brain and a few millimetres underneath it. The ultrasound part of the tool will use cutting-edge techniques called elastography and H-Scan, which will help create a detailed map of the tumour's shape and location, improving the resolution and accuracy. The researchers will be working with doctors and other experts to ensure that the probe is designed to meet the needs of medical professionals. The effectiveness of the probe will be tested in tissue samples and animal models with brain tumours. The successful completion of the proposed work could help doctors more safely and effectively remove brain tumours, with significant benefits for patients.