

## INAE-SERB, DST Abdul Kalam Technology Innovation National Fellowship

**Prof. Hardik J. Pandya**  
(Faculty DESE & Associate Faculty CPDM IISc)

Neonatal hearing screening system

Ear-Clip Neonatal Acquisition Tablet

Actual image of 2 full-term normal neonates wearing the developed neonatal headband

[Prof. Hardik J. Pandya](#), ([Faculty DESE](#) & [Associate Faculty CPDM IISc](#)) has been awarded the prestigious [INAE-SERB, DST Abdul Kalam Technology Innovation National Fellowship 2023](#) for his proposal on Neonatal Hearing Screening System Development and Validation.

Hearing Deficit is the most prevalent chronic sensory deficit at birth. The prevalence of congenital bilateral permanent hearing loss is approximately 1 to 5 per 1000 live births in well-baby nurseries and 2 to 4 per 100 infants in babies admitted to Neonatal Intensive Care Unit. In India, where daily births top 79,726, many are in rural areas with limited healthcare access. Undetected hearing issues can hinder language and educational development. The current gold standard, Auditory Brainstem Response (ABR), is expensive, bulky, and requires skilled professionals, making large-scale neonatal screening difficult, especially in resource-constrained environments. Prof. Pandya's group developed a prototype (portable hearing screener) that combines ABR and Cortical Auditory Evoked Response (MMN), aiming to enhance the current neonatal hearing screening protocol. The team will be studying the efficacy of the screening system on at least 150 neonates followed by translating the prototype to product in the next few years.

[Non-invasive Neural engineering research](#) team at the Biomedical and Electronic Engineering Systems Laboratory ([BEES LAB](#)), [DESE](#), IISc led by Prof. Pandya works on EEG analysis for various translational BCI applications. In the initial phase, they worked on understanding neural signatures from free-running EEG before proceeding with stimuli-evoked EEG. The team designed, developed, and validated an auditory Event-Related Potential (ERP) Extraction system for hearing screening applications. Experiments were performed and results matched with the reference system, in clinical practice. Promising results from young adults encouraged the team to redesign and deploy the headband for neonatal hearing screening. For more information, visit: <https://labs.dese.iisc.ac.in/beeslab/>

About the Fellowship:

Indian National Academy of Engineering (INAE) and Science and Engineering Research Board (SERB), Department of Science and Technology (DST) launched the INAE-SERB, DST Abdul Kalam Technology Innovation National Fellowship in the year 2017 to recognize, encourage, and support translational research by Individuals working in various capacities of engineering profession, in public funded institutions in the country. The fellowships are awarded annually to outstanding engineers/scientists to achieve excellence in engineering, innovation, and technology development. The maximum number of fellowships every year is restricted to ten.

(For more information, visit: <https://www.inae.in/abdul-kalam-technology-innovation-national-fellowship/>)