Dr. Amol Yadav is a biomedical engineer and neuroscientist and is currently an Assistant Professor in the Department of Neurological Surgery at the Indiana University School of Medicine. He earned his PhD in Biomedical Engineering from Duke University under Dr. Miguel Nicolelis, and obtained postdoctoral training in Neurobiology and Neurosurgery at Duke University before launching the Brain-Spine-Machine Interfaces lab at Indiana University. He has published research on generating artificial sensory perceptions, brain-spine interfaces, and multi-animal brainets. Currently, his lab focuses on translational neuroengineering by combining innovations from the fields of brain-machine interfaces and spinal neuromodulation. His lab works at the intersection of engineering and neuroscience to develop neural engineering-based therapies to treat neurological disorders and injuries. Through collaborations with surgeons and clinicians, Dr. Yadav plans to translate novel therapies into patient populations.

ABSTRACT

Neurological disorders and injuries impact the sensorimotor system, affecting millions of individuals with spinal cord injury, limb amputations, stroke, and Parkinson’s disease. Brain-machine interfaces and assistive rehabilitation technologies help to restore motor function, but lack of sensory feedback is a major barrier to effective recovery. In this talk, Dr. Yadav will present a novel spinal neuroprosthesis that can send sensory signals to the brain in order to create artificial sensory experiences in animals. He will also demonstrate that the spinal neuroprosthesis controlled by brain activity in a closed-loop manner can alleviate symptoms of Parkinson’s disease in rodents. After sharing ongoing work in his lab, Dr. Yadav will briefly discuss his future research vision of using spinal interfaces to rehabilitate patients with sensory deficits and developing artificial sensory channels to restore, augment, and modulate human sensory perceptions.