BCL5

5th Workshop on Brain, Computation, and Learning

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Biological Sciences Auditorium

A Spinal Neuroprosthesis to Treat Parkinson's Disease Gait Abnormalities

Abstract: Parkinson's Disease (PD) is a progressive neurological disorder that primarily impairs motor function, severely impacting the quality of life of those affected. Despite pharmacological interventions, such as dopamine therapy, their efficacy diminishes over time, and even advanced treatments like Deep Brain Stimulation (DBS) have limitations, particularly in treating PD's axial symptoms that impact gait, posture, and balance, resulting in freezing episodes and falls. Addressing this gap, Dr. Yadav introduces a novel approach: Sensory Spinal Cord Stimulation (SSCS), specifically targeting Parkinsonian gait abnormalities. In an instructive session, Dr. Yadav will guide the audience through the journey of SSCS from its conception in pre-clinical studies to clinical investigation. This talk promises to shed light on the neurophysiology of the sensorimotor system, the debilitating effects of PD, and the potential of SSCS as a complementary therapy to alleviate gait freezing symptoms. Attendees will gain valuable insights into the future of PD treatment and the exciting potential of novel brain-spine interfaces to enhance the quality of life of those suffering from this challenging disease. Finally, Dr. Yadav will discuss how his lab integrates concepts from brain-machine interfaces and neuromodulation to restore and augment sensorimotor function after spinal cord injury, amputation, and other neurological disorders.