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FRONTIERS IN NEURO-TECHNOLOGY: AN INTERDISCIPLINARY EFFORT TO STUDY BRAIN FUNCTIONS

ABSTRACT

Understanding the working principle of the brain is considered a critical path toward creating general intelligence machines. Besides, the advancement in neuroscience can progress the development of effective treatments for brain diseases, such as Alzheimer‘s Disease and Parkinson‘s Disease, affecting millions of lives. Yet, one fundamental question is, how do we begin to decode the brain, which contains millions to billions of neurons? What signals are important to neural computation? This talk will address these questions from the perspective of neurotechnology development. First, we will introduce a general brain circuit model and the complexity involved in a real brain. We will then walk through a wide range of existing neurotechnologies, covering electrical, optical, magnetic and chemical approaches. We will also provide examples of neuroscience experiments to illustrate their practical values. Last, we will present challenges in the field and the potential research directions that can pave the way to develop the next generation of neurotechnology.

JANUARY 27, 2021
4:00 PM
ONLINE

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