Neurotechnology

Rapid advances in neurotechnology and neurosurgery are positioned to revolutionize care for patients suffering from debilitating neurological and psychiatric disease. Enthusiasm for the adoption of these technologies is tempered by ethical dilemmas regarding resource allocation, provision of care, communication with patients and other providers, and other potential pitfalls. Suresh et al. discuss bioethical implications of novel neurotechnologies for medical practice. In particular, they examine the implications of neurotechnological advancement through the lens of professional communication. Emerging challenges within this domain are presented in the context of physician interactions with four key partners: (i) patients; (ii) other physicians; (iii) industry; and (iv) society-at-large. Anticipated issues as well as mitigation strategies are discussed as they relate to communication with these stakeholders [1)]

Neurotechnology is any technology that has a fundamental influence on how people understand the brain and various aspects of consciousness, thought, and higher-order activities in the brain. It also includes technologies that are designed to improve and repair brain function and allow researchers and clinicians to visualize the brain.

Advances in neurotechnology and computational capabilities, accompanied by shifts in theoretical frameworks, have led to renewed interest in the information represented by single neurons. Using direct interfaces with the nervous system, millisecond-scale information will soon be extracted from single neurons in clinical environments, supporting personalized treatment of neurologic and psychiatric disease. In this Perspective, Cash et al. focus on single-neuronal activity in restoring communication and motor control in patients suffering from devastating neurological injuries. They also explore the single neuron's role in epilepsy and movement disorders, surgical anesthesia, and in cognitive processes disrupted in neurodegenerative and neuropsychiatric disease. Finally, they speculate on how technological advances will revolutionize neurotherapeutics [2)].

1)
Suresh H, Warsi NM, Sankar T, Ibrahim GM. Emerging Neurotechnologies: Implications for Professional Relations and Communication. Can J Neurol Sci. 2023 Jun;50(s1):s4-s9. doi: 10.1017/cjn.2022.339. Epub 2023 May 10. PMID: 37160676.
2)
Cash SS, Hochberg LR. The emergence of single neurons in clinical neurology. Neuron. 2015 Apr 8;86(1):79-91. doi: 10.1016/j.neuron.2015.03.058. Review. PubMed PMID: 25856488; PubMed Central PMCID: PMC4427516.

From:
https://neurosurgerywiki.com/wiki/ - **Neurosurgery Wiki**

Permanent link:
https://neurosurgerywiki.com/wiki/doku.php?id=neurotechnology

Last update: **2024/06/07 02:57**