

Automated Optimized Adaptive Neurostimulation

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VALUE PROPOSITION

The global neuromodulation and neurostimulation device market has experienced robust growth in recent years driven by rising incidences of neurological disorders, chronic pain and mental health conditions, alongside advancement in minimal invasive technologies. Despite the advances, clinicians still face significant challenges in programming adaptive neurostimulation systems due to vast number of possible parameter combinations and patient-specific variability. Current methods rely on manual trial-and-error which is time-consuming and inconsistent.

TECHNOLOGY DESCRIPTION

UCSF investigators developed an automated method for optimizing settings in multi-parameter adaptive neurostimulation, including adaptive deep brain stimulation. It addresses the complexity of programming these systems by combining modeling of stimulation and medication effects, neurostimulator internal operations, unsupervised machine learning, and Bayesian optimization. Real patient data has been used to test the system, demonstrating its ability to suggest optimal settings that clinicians can implement.

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OTHER INFORMATION

KEYWORDS

AI, machine learning, digital health, medical device, therapeutic, mental health, behavioral health, neurodegeneration

CATEGORIZED AS

- ▶ **Biotechnology**
- ▶ Health
- ▶ **Computer**
- ▶ Software
- ▶ **Medical**
- ▶ Disease: Central Nervous System
- ▶ Software

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