Optimized Encoding of Sensation in Brain-Machine Interfaces

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Goal:
Provide stimulation for somatosensation in a robust and efficient parameter search algorithm

Algorithm:
Search multiple parameter dimensions (location, frequency, amplitude, etc.) by **evaluating clusters** in the **neural response space**

Cost function:
Maximize discriminability between responses

Method:
Stimulate in **S1** and record in **M1**

Stimulate S1

Record "downstream"

Optimize Search: Stimulate Patterns That Evoke Distinct Neural Responses

Cost Function: Maximize Discriminability Among **Multiple** Responses

Machine Learning: Generate New Stimulation Pattern

Cost Function: Minimize Error between Evoked and Desired Response