Pulse Parameter Modulation for Electrical Stimulation

Pulse Parameter Modulation (PPM) optimizes electrical stimulation waveforms to significantly reduce power consumption and enable smaller, more selective medical implant devices.

Purdue University researchers have developed a novel method of designing stimulus waveforms called Pulse Parameter Modulation (PPM). By pulsing the electric signal at the right rate the neurons respond the same way as they would to a continuous pulse with less impedance. This means that less power is needed to achieve the same effects, which will increase the lifespan of battery-powered implants and allows smaller stimulation electrodes with higher spacial locality. The pulsing can also be utilized to more selectively activate certain neuron populations (i.e. A, B, or C fibers) based on their activation levels and time constants.

Potential Applications:

-Biomedical Engineering / Biosensors

-Medical Devices

-Electrical Engineering / Digital Circuits

-Digital Modulation

-Sensors and Transducers

TRL: 4

Intellectual Property:

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