

# **A Versatile Labview-Based Toolbox Design and Man-Machine Interface For The Electrical Stimulation System**

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摘要

## **Abstract**

This article introduces the modification of a self-developed prototype electrical stimulator. In addition, we describe our new design of a versatile and user-friendly toolbox based on the LabVIEW environment that will enable clinical users and physicians to easily go on to further applications and research. The prototype electrical stimulator is based on the digital signal processor, and the drive stage of the previous model has also been improved by using a modified constant-current circuit. Moreover, we use LabVIEW to implement the man-machine interface and to develop a user-friendly toolbox. This system is versatile and feasible from the viewpoint of the hardware and software designs. With the virtual instrument in the toolbox, the man-machine interface is easy for users to implement and helpful in their further research. Furthermore, this toolbox includes many units and parameters, such as waveform types, currents, stimulation time, and others. The system can be considered a versatile and full-featured stimulator for various applications, with its high flexibility in stimulation patterns and multi-channel designs. The proposed system can produce suitable electrical stimulation by tuning the parameters in the interface. The procedure described above can also be implemented in man-machine interfaces for different research purposes.