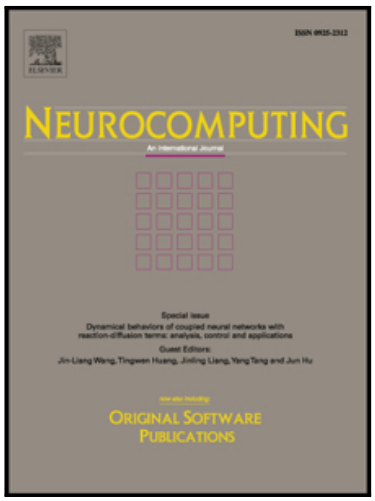

Firing Regularity Control of Single Neuron based on Closed-loop ISI Clamp

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Highlights

- The closed-loop ISI clamp method is proposed, and it consists of a highly nonlinear filter -the Unscented Kalman Filter (UKF), on-line calculation of ISI response feature, and a feedback loop of maintaining regularity of ISI.
- The firing regularity of neurons as well as the clamp of different firing patterns can be controlled by the closed-loop ISI clamp method.
- The hidden electrophysiological properties of neurons can be estimated by the closed-loop ISI clamp, and the roles of those properties in shaping different firing patterns can be explored.