Cellular neural networks and computational intelligence in medical image processing

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Abstract

The principal constituents of computational intelligence are fuzzy logic, neural networks and evolutionary algorithms, with emphasis in their mutual enhancement. The present paper reviews some applications of these formalisms in the area of medical image processing, where advantage is taken from the ability of fuzzy logic to work with imprecise information, the ability of neural networks to learn a system's behavior from representative examples and the ability of evolutionary algorithms to optimize complex systems, particularly when no mathematical model is available. The paper focuses mainly on neural networks in medical image processing. A special kind of cellular neural networks based on multiple valued threshold logic in the complex plane will be presented and its efficacy for medical imaging will be documented.

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