A primer on deep learning and convolutional neural networks for clinicians

- Iglesias L.L.[a],
- Bellon P.S.[b, c],
- del Barrio A.P.[b, c],
- Fernandez-Miranda P.M.[b, c],
- Gonzalez D.R.[a],
- Vega J.A.[d, e],
- Mandly A.A.G.[b, c],
- Blanco J.A.P.[b, c]

Abstract

Deep learning is nowadays at the forefront of artificial intelligence. More precisely, the use of convolutional neural networks has drastically improved the learning capabilities of computer vision applications, being able to directly consider raw data without any prior feature extraction. Advanced methods in the machine learning field, such as adaptive momentum algorithms or dropout regularization, have dramatically improved the convolutional neural networks predicting ability, outperforming that of conventional fully connected neural networks. This work summarizes, in an intended didactic way, the main aspects of these cutting-edge techniques from a medical imaging perspective. © 2021, The Author(s).

Author keywords

Deep learning; Educational; Image processing; Medical imaging