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Non-intrusive assessment of pressure injuries using Artificial intelligence and computer vision

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Abstract

Pressure injuries represent a major concern in many nations. Disabled and elderly people are highly affected by this fast-growing disease. A continuous assessment of pressure injuries is crucial for an efficient treatment. If retrieving quantitative information using invasive methods is considered to most used method, it remains painful to the patients and may also increase the risk of infections. Hence, developing non-intrusive methods for the assessment of pressure injuries would represent a highly useful tool for caregivers and a relief for the patients. Combining sensors information, image processing techniques and artificial intelligence represent a promising solution for this challenge. The main outputs of the designed system are: real measurements (area, volume, depth and perimeter), tissue types present in the wound, temperature and the presence of infection. Data collection represents a paramount step for the achievement of accurate results, as deep learning models require a large number of data to learn the underlying features. Then, imparting 3D reconstruction using stereo matching with DL models for the segmentation and classification of tissue types will enable the user to extract all the useful information about the pressure injury and hence track its healing.

Biography

Sofia. Z is currently in her 3rd year of a dual PhD at the age of 24 years in both University of Deusto, Spain and University of Louisville, USA. She obtained her master's degree with honors in Electronics, specialized in image and signal processing, from ENSEIRB-MATMECA, Bordeaux Graduate School of Engineering, France. Her PhD thesis is on Deep Learning for biomedical image analysis. She is working on different study cases, among them: pressure injuries assessment, brain disorders classification using fMRI, and colon polyp's classification.

Publication

Pressure injury image analysis with machine learning techniques: A systematic review on previous and possible future methods

Dyslexia detection using 3D convolutional neural networks and functional magnetic resonance imaging

Automatic colon polyp classification using Convolutional Neural Network: A Case Study at Basque Country

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