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An experimental research in health informatics for designing an enhanced intelligent could-based collaborative multi-modal framework for medical imaging diagnostics (Article)

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Abstract

View references (35)

The computer aided systems (CAD) commonly provide a collaborative means to help medical practitioners in disease analysis and cure for patients. The accuracy of such systems is highly dependent over enhanced identification of regions of interest in medical diagnostics especially in medical images. Despite the existence of several medical imaging diagnostic systems, an enhanced collaborative framework for significant imaging analysis is still required. This paper presents an experimental research in health informatics to design an enhanced collaborative framework for medical diagnostics employing software computing techniques. The major components of this system are preprocessing, segmentation, image enhancement, pattern matching and diagnostic decision. Fuzzy rules have been applied with new wavelet transforms for image enhancement and identification of hotspot regions in a series of images. The system builds a collaborative framework for archiving, extraction and matching of various enhanced images. The medical practitioner makes an initial decision from the retrieved images, collects and fuses the feedbacks from the system and produce a final decision. The integrated software techniques employed in collaborative framework have been tested over real benchmarked datasets of diverse medical images and outperformance of the system was observed as compared with existing methods including logarithmic image processing method, sigmoid transformation method, histogram equalization transformation method and linear gray-level transformation method.

Author keywords

Fuzzy Logic Image Enhancement Image Filters Medical Diagnostics Pattern Matching Software Computing Techniques Wavelet Transforms

Indexed keywords

EMTREE medical terms: Article computer aided design computer assisted tomography controlled study decision making diagnostic accuracy feedback system fuzzy logic histogram human image enhancement image processing medical informatics medical research nuclear magnetic resonance imaging signal processing wavelet analysis

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