Title: Pattern Recognition in Multimodal Medical Imaging for Disease Diagnosis

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PROPOSAL

A wealth of information that is distinct from and complimentary to one another is encompassed by the various imaging modalities. To get a more accurate assessment, it seems logical to mix images from several modalities. Significant advancements have been made in enhancing clinical accuracy through multimodal medical imaging. In addition to showing enormous promise for multimodal medical imaging evaluation, deep learning is exhibiting remarkable performance in recognizing images. Science in biomedicine and clinical illness analysis depend heavily on multimodality medical image fusion technology. The structure and function of the brain are systematically altered in several illnesses. Statistical comparisons at the group level have long dominated the field of neuroimaging, offering exciting new insights into the parts of the brain involved in different disorders. Considering individual patients, however, this group-level data lacks diagnostic relevance.

The medical field has made tremendous strides, resulting in the development of a variety of imaging sensors that have enhanced clinical judgement. Multiple modalities are typically insufficient to see all of the components of the human body and their capacities for diagnosis. In order to create a new image that can enlighten the expert significantly through its complimentary information, data from many sensors can be integrated. Contemporary imaging technologies possess spatial, frequency, and dynamic range resolutions that are greatly beyond those of the human visual system. This could lead to machine-learning-based image pattern recognition systems surpassing human image transcription. Employing a variety of imaging modalities, the suggested approach can automatically extract generic multi-level and multimodal features for segmentation that are, to some extent, resistant to changes in scale and orientation. Because medical imaging is so important to contemporary healthcare, image databases, image archiving, and communication systems have all been made possible by its wide acceptance. It has been demonstrated that image fusion improves vital elements of multimodal data sources, allowing for better intervention and diagnosis. An integrated effort is necessary for the progress of image fusion techniques and for the smart choice of multimodal medical image composites in the environment of susceptible identification.

In order to give people curious about the area a place to start, this special issue on deep learning in multimodal medical imaging evaluation highlights the challenges and limitations in the area. With a focus on the fusion methodology and feature extraction depth models, the state-of-the-art multimodal evaluation of medical images is presented, based on an explanation of the fundamental concepts of deep learning and medical imaging. Possibilities for multimodal medical imaging, particularly those involving cross-modality, are also outlined. We accept submissions from a variety of fields and viewpoints, such as but not limited to: Pattern Recognition in Multimodal Medical Imaging for Disease Diagnosis.

Potential List of Topics Includes:

- Extensive multimodal merging of image and non-picture data for illness diagnosis
- Theoretical foundation and current developments in multimodal medical image fusion
- Segmentation of multimodal medical images using genetic algorithms and deep residual network
- Dynamical wavelet transforms creation and implementation for multimodal medical image fusion
- Assessing integrated deep learning in radiologist: Going Beyond Medical Imaging
- An overview of multimodal medical image fusion strategies and tactics
- Integrated multimodal medical image fusion employing disease assessment techniques
- Automated recognition of patterns from medical imaging from a categorization perspective
- An exploration of multimodal medical data mining using deep learning techniques
- An evaluation of medical image fusion techniques using multiple modalities
- Improvement of multimodal medical image fusion methods for clinical conditions