

Classification of Medical Images using Artificial Neural Network

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Medical imaging is a rapidly developing field and is complemented by the enhancement in image processing techniques including image enhancement, recognition, and analysis. The images taken provides insight into the inner structure of the body which can be used for medical as well as a scientific study, disorder identification, and treatment. Apart from its useful applications they have several other benefits like faster and economical processing, easier storage and transfer of data, and allowing enhanced manipulation of data. Advancements made in medical imaging over the last two decades have created unprecedented opportunities for new diagnostic approaches by utilizing the interdisciplinary field of medical image processing. In this work, various medical images of different types, acquired from different sources, are analyzed using an artificial neural network that utilizes a global image representation technique to denoise the confounded image data and provide a set of the image feature vector for analysis. The system makes use of clustering to provide a visualization of this similarly arranged data. The approach taken provides a generic solution that can be applied to an even wider medical image dataset. The practical application of this work is in the field of pathology where it can be used to provide a preliminary analysis of the dataset or give a second opinion to pathologists. The system was tested using 3 datasets of different sizes and dimensions achieving a minimum accuracy of 76%. This work showcases the potential that machine learning can have in the field of medical imaging and analysis.