World Academy of Science, Engineering and Technology
International Journal of Biomedical and Biological Engineering
Vol:17, No:03, 2023

U-Net Based Multi-Output Network for Lung Disease Segmentation and Classification Using Chest X-Ray Dataset

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Abstract : Medical Imaging Segmentation of Chest X-rays is used for the purpose of identification and differentiation of lung cancer, pneumonia, COVID-19, and similar respiratory diseases. Widespread application of computer-supported perception methods into the diagnostic pipeline has been demonstrated to increase prognostic accuracy and aid doctors in efficiently treating patients. Modern models attempt the task of segmentation and classification separately and improve diagnostic efficiency; however, to further enhance this process, this paper proposes a multi-output network that follows a U-Net architecture for image segmentation output and features an additional CNN module for auxiliary classification output. The proposed model achieves a final Jaccard Index of .9634 for image segmentation and a final accuracy of .9600 for classification on the COVID-19 radiography database.

Keywords : chest X-ray, deep learning, image segmentation, image classification
Conference Title : ICBIRS 2023 : International Conference on Biomedical Imaging and Radiological Sciences
Conference Location : Miami, United States
Conference Dates : March 16-17, 2023