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| Sl. No | Citation | Methodology | Dataset | Result | Merits and Demerits |
| 1. | A deep transfer learning model with classical data augmentation and CGAN to detect COVID-19 from chest CT radiography digital images  Mohamed Loey  Gunasekaran Manogaran  Nour Eldeen M. Khalifa | In this paper, we introduce DTL models to classify limited COVID-19 chest CT scan digital images. To input adopting CT images of the chest to the DCNN, we enriched the medical chest CT images using classical data augmentation and CGAN to generate more CT images. After that, a classifier is used to ensemble the class (COVID/ NonCOVID) outputs of the classification outcomes.  The introduced DTL models have end-to-end structure without classical feature extraction and selection methods.  DTLmodels like AlexNet, VGGNet16, VGGNet19, GoogleNet, and ResNet50 are used.  **Steps:**   1. Preprocessing of CT images. 2. t data augmentation and conditional generative adversarial network (CGAN) applied on images. 3. DTL model like AlexNet, VGGNet16, VGGNet19, GoogleNet, and ResNet50 are used in the performance measurement phase. | 1. **Train Set**   Covid : 191  Non-covid: 234   1. **Test Set**   Covid : 94  Non-covid: 105   1. **Validation Set**   Covid : 60  Non-covid: 58 | The first DTL model investigated is AlexNet along with four scenarios shows that the highest testing accuracy using AlexNet is 76.4% when the COVID19 CT dataset is augmented with data augmentation along with CGAN.  The second DTL model is investigated with VGGNet16, the highest testing accuracy using VGGNet16 is 78.9% when the COVID-19 CT dataset is augmented with classical data augmentation along with CGAN.  The third DTL model is investigated with VGGNet19, the highest testing accuracy using VGGNet19 is 76.9% when the COVID-19 CT dataset is not augmented.  The fourth DTL model is investigated with GoogleNet, the highest testing accuracy using GoogleNet is 77.4% when the COVID-19 CT dataset is augmented with the classical data augmentation along with CGAN.  The final DTL model will be investigated with ResNet50. The highest testing accuracy is 82.9% when the COVID-19 CT dataset is augmented with classical data augmentation.  Testing accuracy for the different four scenarios, the Resnet50 achieved the highest accuracy with 82.9%, this is due to the large number of parameters in the Resnet50 architecture which contains millions of parameters which are not larger than VGGNet and GoogleNet, but the VGGNet and GoogleNet only include 16, and 22 layers while the Resnet50 includes 50 layers. | **Merits:**   * ResNet50 is the best classifier to detect the COVID-19 in CT dataset with classical data augmentation along with CGAN. The classical data augmentation along with CGAN improves the performance of classification in all deep transfer models (AlexNet, VGGNet16, GoogleNet, ResNet50).   **Demerits:**   * Since the dataset is taken from different websites the image quality was different. * The other bottleneck is the limited size of the COVID-19 CT database. Predictably the performance of deep transfer models can be further improved if more data are collected in the future. |