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| Sl. No | Citation | Methodology | Dataset | Result | Merits and Demerits |
| 1. | Detection of COVID-19 from Chest X-Ray Images Using Convolutional Neural Networks  **Boran Sekeroglu and Ilker Ozsahin** | In their study, they considered transfer learning using pre-trained networks such as **VGG19, MobileNet V2, Inception, Xception**, and **Inception ResNet V2**.  The classification was performed between **COVID-19 and normal images, COVID-19 and pneumonia images**, and **COVID-19, pneumonia, and normal images**.  Five machine learning classifiers—**support vector machines (SVMs), LR, naive Bayes (nB), decision tree (DT), and k-nearest neighbor (kNN)**—were implemented with 14 statistical data attributes.  **Steps:**   1. Pre-processing of image: resized to 640 x 480. 2. The APPN approach was implemented to obtain 30 x 20 images. 3. In addition, original images were also sent to ConvNets without preprocessing. 4. A vector with 14 attributes is created and fed to five machine learning classifiers. 5. The images with best results, which were the unprocessed images, were compared with the pre-trained models. | **Covid 19 Chest X-ray Dataset** (Source: [github](https://github.com/ieee8023/covid-chestxray-dataset))   * Total: **225** * Male: **131** * Female: **64**   **Chest X-ray Images**:  (Source: [kermany et al](https://doi.org/10.1016/j.cell.2018.02.010))   * Total: **5875** * Pneumonia: **4292**   Bacterial: **2790**  Viral: **1502**   * Normal: **1583**   **12.5%** and **87.5%** of the data were used for **testing** and  **Training**. | Models are evaluated using different criteria, such as **classification accuracy, sensitivity** (true positive rate), **specificity,** and **ROC AUC.**  Several evaluation metrics were used to evaluate the results obtained from two different datasets.  For two-class experiments (COVID-19/Normal and COVID-19/Pneumonia)  **MobileNet V2**   * Accuracy: 97.40%   **VGG19**   * Accuracy: 98.75%   For three-class experiments (COVID19/Pneumonia/Normal)  **MobileNet V2**   * Accuracy: 92.85%   **VGG19**   * Accuracy: 93.48%   In covid19/Normal Classification   * highest mean specificity: 99.78% * highest mean accuracy: 99.11% * highest mean sensitivity was achieved by DenseNet121 (93.92%) and its mean ROC AUC score was 96.8 %.   In Covid19/Pneumonia classification:   * highest mean ROC AUC score 96.33% * highest mean specificity: 92.88% * highest mean accuracy: 99.44% * highest mean specificity was achieved in transfer learning experiments by ResNet50 (100%)   For three-class experiments (COVID-19/Pneumonia/ Normal)   * macro-averaged F1scores were between 92.70 and 94.10% * Highest macro averaged F1 Score: 94.10 % | **Merits:**   * Convolution Neural Networks with minimized convolution and fully connected layers are capable of detecting Covid-19 with great mean ROC AUC scores. * second-lightest architecture, is capable of detecting COVID-19 in three-class, COVID-19/Pneumonia/Normal images, with a macro-averaged F1score of 94.10% * The lightest ConvNet outperformed the other considered ConvNet structures and pre-trained models, even though the number of training samples increased. * This AI-based automated technologies produce high-accuracy.   **Demerits:**   * Since the dataset is taken from different websites the image quality was different. * the small sample size of COVID-19 images, which restricts the appropriate cohort selection and might result in a biased conclusion. |