| **Citation** | **Method** | **Dataset** | **Result** |
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| Optimizing data augmentation and CNN hyperparameters for improved **COVID-19** detection from CXR  **Maram Mahmoud A. Monshi,**  **Josiah Poon,**  **Vera Chung , Fahad Mahmoud Monshi** | **CovidXrayNet model,** which classifies a CXR into either “COVID-19′′, “normal”, or “pneumonia”,  Performed several augmentation techniques on the CXRS before it is fed to the pre-trained EfficientNet-B0, with optimized CNN hyperparameters and.  **Data Augmentation** :  For each independent parameter,   * Resize * Rotate * Zoom * Warp, * Lighting, * Flip(dihedral) * Mixup(0.4) * Erasing(random) * Normalize (imagenet) * Multiple Param (pipline)   Trained **ResNet-18** on COVIDcxr dataset for 30 epochs to examine the effects of various transformers on COVID-19 CXR classification,to find the best combination of choices and orders of data augmentation that ensured the **ResNet-18** gave the best accuracy  Then, trained popular **CNN architectures** on both datasets for 30 epochs using the optimized data augmentation pipeline.  Among various CNN architectures, **EfficientNet-B0** accomplishes the best results  **Optimizing CNN hyperparameters** : using both datasets . For each independent parameter, trained **several architectures** to examine the effects of various hyperparameters on the accuracy of the classification  Based on this **trial and error** method,selected the optimal hyperparameters for **EfficientNet-B0** | (a)COVIDcxr  (generated from two open-source repositories)  **Total : 960**   * Normal : 320 * Pneumonia : 320 * Covid : 320   **Training : 768**  **Validation : 192**  (b)COVIDx  **Total** **: 15496**   * Normal : 8851 * Pneumonia : 6056 * Covid :589   **Training : 13917**  **Validation : 1579**   * Normal : 885 * Pneumonia : 594 * Covid : 100 | EfficientNet-B0 performs well for COVID-19 CXR classification with the following data augmentation pipeline: squishing the CXR to **480x480** pixels, rotating by **20◦**, zooming by **1.2 scale**, warping by **0.2 magnitude**, lighting by **0.3 scale**, and normalizing.Also,the label smoothing cross-entropy loss function, at the batch size of 32 with 30 epochs, increases the accuracy of CovidXrayNet on the COVIDx dataset.  **CovidXrayNet:**  **Accuracy** : 95.82  **MCC** : 92.24  **Precision** : 96.93  **Recall** : 96.93  **F1** : 96.16 |