# An adaptive data processing framework for cost- effective covid-19 and pneumonia detection


## ABSTRACT

Medical imaging modalities have been showing great potentials for faster and efficient disease transmission control and containment. In the paper, we propose a costeffective COVID-19 and pneumonia detection framework using CT scans acquired from several hospitals. To this end, we incorporate a novel data processing framework that utilizes 3D and 2D CT scans to diversify the trainable inputs in a resource-limited setting. Moreover, we empirically demonstrate the significance of several data processing schemes for our COVID-19 and pneumonia detection network. Experiment results show that our proposed pneumonia detection network is comparable to other pneumonia detection tasks integrated with imaging modalities, with 93% mean AUC and 85.22% mean accuracy scores on generalized datasets. Additionally, our proposed data processing framework can be easily adapted to other applications of CT modality, especially for cost-effective and resource-limited scenarios, such as breast cancer detection, pulmonary nodules diagnosis, etc.