

Topic: Medical Personal Protective  
Equipment Dataset

18/14 June 18

Abstract.

We present a new challenging dataset, CPPE-5, with the goal to allow the study of subordinate categorization of medical personal protective equipments which is not possible without other possible datasets that focus on broad level categories. To make it easy for models trained on this dataset to be used in practical scenarios in complex scenes, our dataset mainly contains images that show complex scenes with several object in each scene in their natural context. The image collection for this dataset focuses on: obtaining as many non iconic images as possible and making sure all the images are real images, unlike other existing datasets in this area. Our dataset includes 5 object categories and each image is annotated with a set of bounding boxes and positive labels. We present a detailed analysis of the dataset in comparison to other popular broad category datasets and as well as datasets focusing on

personal protective equipments, we also find that at present there exist no such publically available datasets. Finally, we also analyse performance and compare models complexities on baseline and state of the art models. For bounding box results our code, data and trained models are available at

### Conclusion:

This paper presented a new object detection dataset, The Medical Personal Protective Equipment Dataset, which is the first dataset focusing on subordinate category of medical Personal Protective items and would have wide practical uses. We conducted a detailed analysis of the dataset and compared it to other popular brand category datasets and datasets focusing on personal protective equipment. We found that there is currently no publically available dataset for studying subordinate categorization of medical personal protective equipment. Overall, our CPE-5 datasets fills a significant gap in the availability of datasets for the study of subordinate categorization of medical personal protective equipment. We annotate a large number of well distributed oriented objects with oriented bounding boxes with



emphasizes on placed on finding non iconic images of data objects in natural environments and varied viewpoints. We assume this dataset is challenging but very similar to real world scenarios. Making this an appropriate dataset for practical applications. We explained how the data was collected and annotated and presented dataset statistics indicating that the images often contain multiple bounding boxes per image. We further also evaluated multiple modern state of the art and baseline object detection models trained on our dataset, establishing a benchmark for subordinate categorization of for medical personal protective equipment images. Many object detection algorithms benefit from additional annotations, such as the amount an instance is occluded or the location of key points on the object which we believe are promising directions for future annotations. Detecting medical personal protective equipments is a task of great practical importance, we believe CPE-5 will not only promote the development of object detection algorithms for this purpose but also pose interesting algorithmic questions to general object detection in computer vision.