

Additive Angular Margin for Few Shot Learning to Classify Unseen Endoscopy Diseases

Sharib Ali¹, Binod Bhattarai², Tae-Kyun Kim², and Jens Rittscher¹

¹ Institute of Biomedical Engineering, University of Oxford, Oxford, UK

² Dept. of Electrical and Electronics Engineering, Imperial College London, UK
 sharib.ali@eng.ox.ac.uk

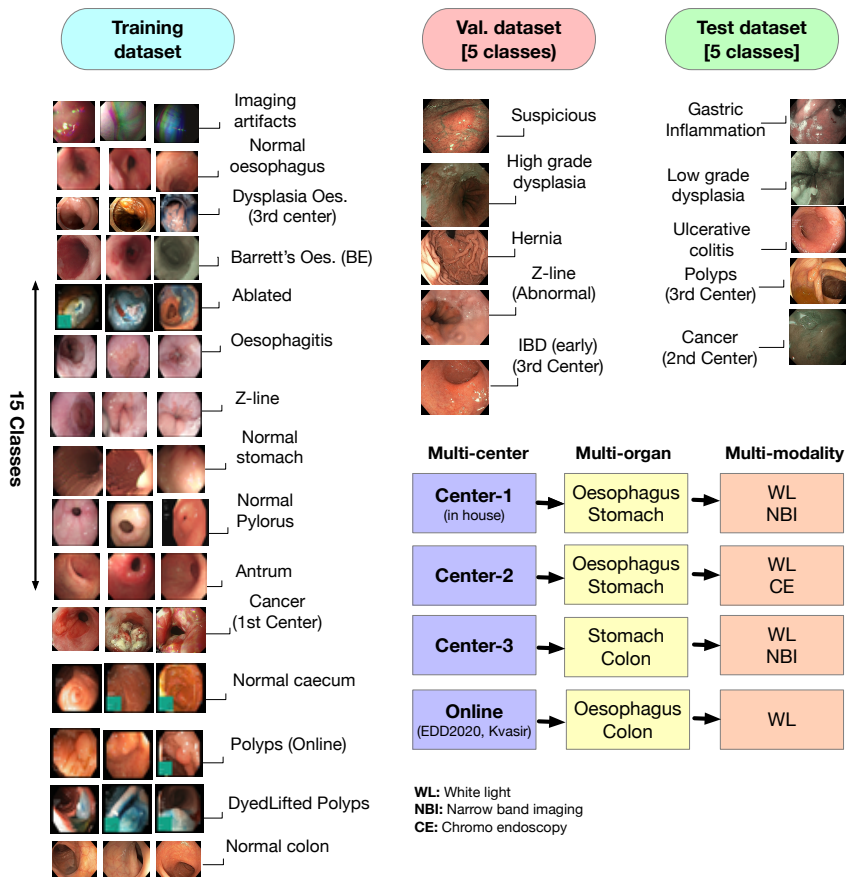


Fig. 1. Endoscopy classification dataset for gastrointestinal tract (referred as *miniEndoGI*). *miniEndoGI* dataset consists of 15 classes in the training set and 5 classes each in the validation and the test set. Each class consists of 60 images per class. However, random sampling is done during training utilising n -shot and k -way meta-training approach. The dataset consist of multi-center, multi-organ and multi-modality as shown in the right bottom.

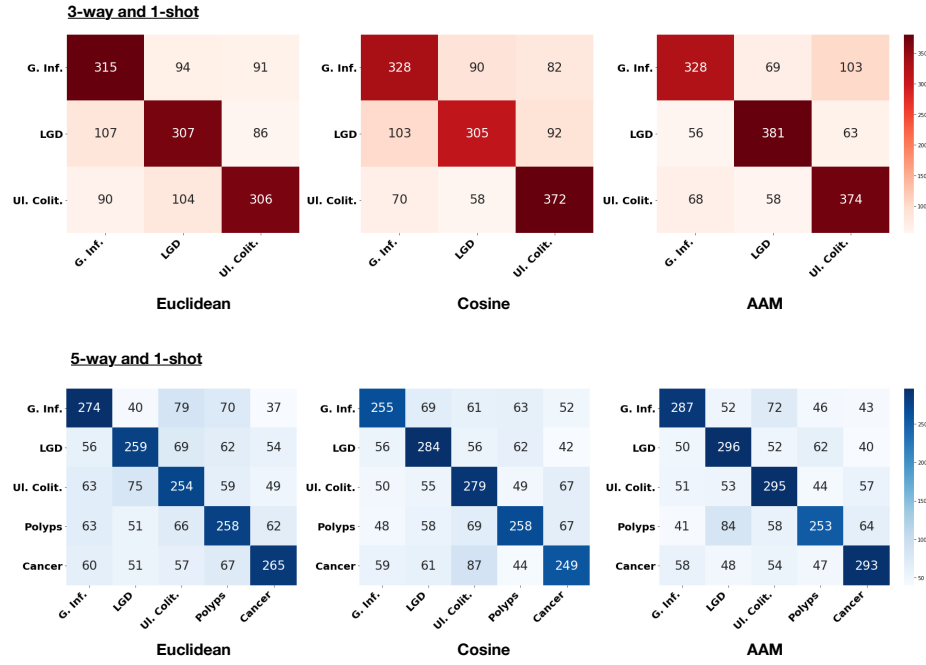


Fig. 2. Confusion matrix for 3-way and 5-way classification with a single sample (1-shot). Top: 3-way and 1-shot, i.e., 1 sample was provided for classifying images from 3 classes ($k = 3$). Bottom: 5-way and 1-shot, i.e., 1-sample was provided to predict between 5 classes ($k = 5$). Random values $[1, 500]$ for k -test classes were provided for each case. Per class classification for each case is provided as the confusion matrix where the diagonal elements represents the correctly identified labels. Similar fashion was adapted for training on NVIDIA 2080Ti GPU. Please see Section 3 of the main manuscript regarding details on training.