Supplementary Material: Multi Label Loss Correction against Missing and Corrupted Labels

Amirmasoud Ghiassi   S.GHIASSI@TUDELFT.NL
Delft University of Technology, Delft, Netherlands

Robert Birke   ROBERT.BIRKE@UNITO.IT
Computer Science dept., University of Turin, Turin, Italy

Lydia Y.Chen   LYDIAYCHEN@IEEE.ORG
Delft University of Technology, Delft, Netherlands

Combining MLLSC with ASL loss function

MLLSC can be easily integrated into different types of multi-label loss functions. Here we provide the resulting loss function for MLLSC + ASL (Ridnik et al., 2021). ASL is an asymmetric multi-label loss which weights positive and negative labels differently (see Eq.4 in the main paper). We define MLLSC combined with ASL as

$$
\begin{cases}
\mathcal{L}_k^+ = \mathbb{1}(p_k > \tau)\,(1 - \mathcal{P}'_{k,m})^{\gamma_+} log(\mathcal{P}'_{k,m}) + (1 - \mathbb{1}(p_k > \tau))\,\mathcal{P}'^{\gamma_-}_{k,m} log(1 - \mathcal{P}'_{k,m}) \\
\mathcal{L}_k^- = \mathbb{1}(p_k < \tau')\,\mathcal{P}'^{\gamma_-}_{k,m} log(1 - \mathcal{P}'_{k,m}) + (1 - \mathbb{1}(p_k < \tau'))\,(1 - \mathcal{P}'_{k,m})^{\gamma_+} log(\mathcal{P}'_{k,m})
\end{cases}
\tag{1}
$$

where γ_+ and γ_- are the focus parameters for positive and negative labels, and $\mathcal{P}'_{k,m} = \max(p_k - m, 0)$ is the marginal probability with tunable hyper-parameter m. Besides, $\mathbb{1}(\cdot)$ is an indicator function. We set $\gamma_- = 4$, $\gamma_+ = 2$ and $m = 1$ according to the default values in (Ridnik et al., 2021).

References

Tal Ridnik, Emanuel Ben Baruch, Nadav Zamir, Asaf Noy, Itamar Friedman, Matan Protter, and Lihi Zelnik-Manor. Asymmetric loss for multi-label classification. In *ICCV*, pages 82–91. IEEE, 2021.