1. The impact of unidirectional metric loss

The unidirectional metric loss is a key component of MAUM. $\lambda$ (in Eq. 3) controls the strength of unidirectional metric loss in $L_{\text{Total}}$ (Eq. 3). Fig. 1 experimentally analyzes the impact of $\lambda$ on SYSU-MM01. We vary the $\lambda$ from 0.1 to 3. We make two observations as follows.

First, when $\lambda$ is very small, for example $\lambda = 0.1$, the unidirectional metric loss makes little contribution to the embedding optimization. The modality-specific loss plays the dominant role in embedding learning. Even so MAUM also obtains the better performance than baseline. It indicates that cross-modality re-ID benefits from the unidirectional metric loss.

Second, as $\lambda$ increases, the performance of MAUM gradually increases to the maximum (when $\lambda$ is 1.0) and then decreases. When $\lambda$ is too large, the unidirectional metric loss makes more contribution than modality-specific loss in embedding leaning and shrinks the performance of MAUM.

Based on the above observations, we select $\lambda = 1$ in all our experiments, which balances the modality-specific loss and cross-modality unidirectional metric loss in Eq. 3.