M: Element-wise Multiplication **D**: Progressive Dropout **S**: Weighted Sum **L**: Loss Function **G**: Classification Gate Mechanism

(a) Weakly-supervised Pseudo Mask Generation

Weights from last iteration

CNN

Input x

pseudo mask **bn7**

pseudo mask **b5_2**

pseudo mask **b4_5**

m

$\mathcal{M}$ $\hat{\mathcal{M}}$

$\mathcal{A}$

$\tilde{m}$

GAP

ω_1 ω_2 ω_3 ω_n

$\hat{y}_k$

(b) Pseudo-supervised Tissue Semantic Segmentation

MLPS

$\mathcal{L}_{bn7}$

$\mathcal{L}_{b5\_2}$

$\mathcal{L}_{b4\_5}$

Result s

CNN

Input x