Idea_before

Idea_now

Step 1: feed input_1, input_2, input_3 into selector

input_1   input_2   input_3

Selector

prob_1   prob_2   prob_3

Sampling

mask_1   mask_2
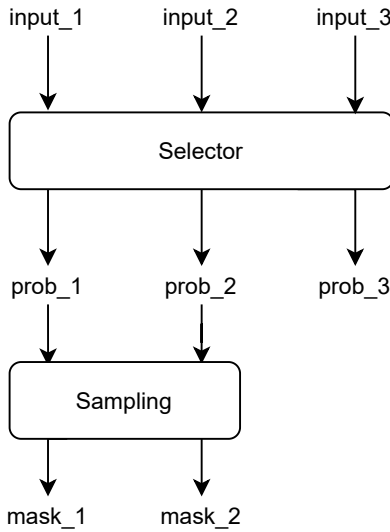
Step 2.1: train predictor and baseline as binary classifiaction

input_1   input_2
&   &
mask_1   mask_2   input_1   input_2

Predictor   Baseline
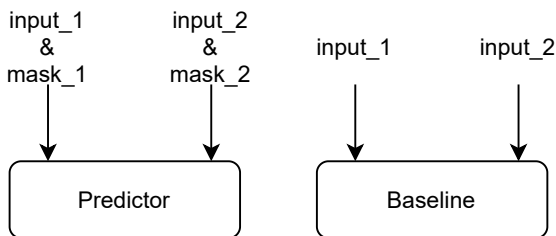
Step 2.2: get loss difference for input_1 and input_2 separately $\longrightarrow$ Step 2.2: get only one pairwise loss difference

input_1   input_2
&   &
mask_1 input_1 mask_2 input_2

Predictor Baseline Predictor Baseline

Loss difference(D1)   Loss difference(D2)

input_1   input_2
&   &
mask_1   mask_2   input_1   input_2

Predictor   Baseline
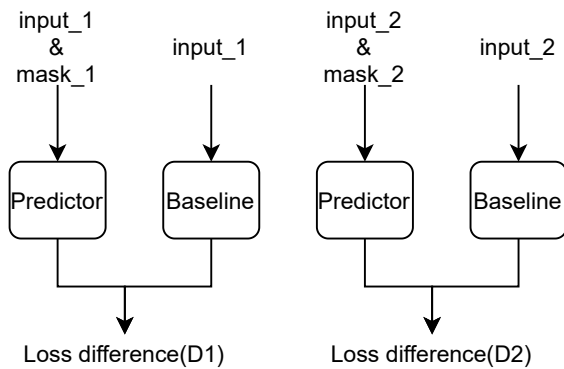
Loss difference(D)

Step3: an approximated loss of selector

$$\frac{1}{2}(D1 \bullet prob\_1 + D2 \bullet prob\_2)$$
$$+$$
$$marginloss(prob\_1, prob\_2, prob\_3)$$
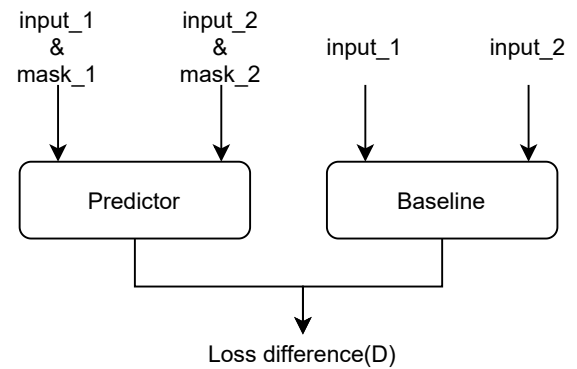
Step3: an approximated loss of selector

$$\frac{1}{2}(prob\_1 + prob\_2) \bullet D$$
$$+$$
$$marginloss(prob\_1, prob\_2, prob\_3)$$