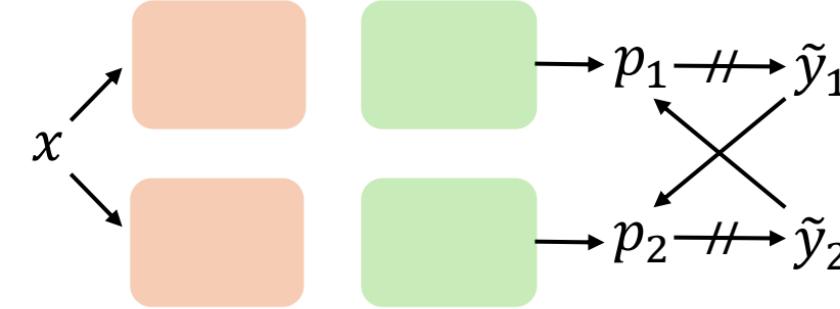
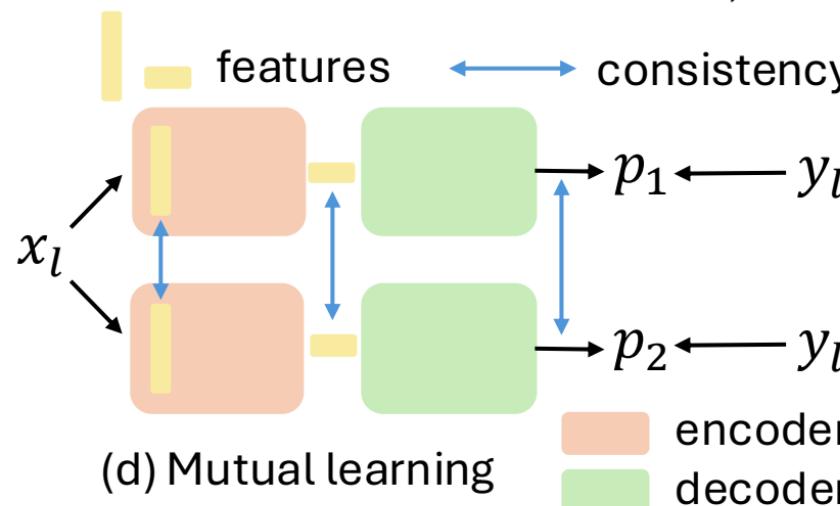


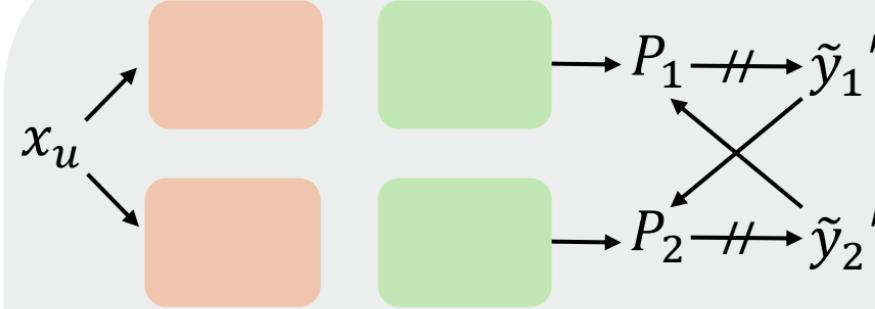
### Single forward pass



(a) Cross-supervision  $x \in (x_l, x_u)$



### Multiple forward pass



(b) Uncertainty-guided pseudo-label

$$P = \frac{1}{m} \sum_{n=1}^m p_n$$

$$H = \frac{1}{m} \sum_{n=1}^m h(p_n)$$

$\mathbb{1}$  indicator function

### Joint pseudo-label

$$M = \mathbb{1}(U_1 < U_2)$$

$$p_j = M \odot P_1 + (1 - M) \odot P_2$$

$$\tilde{y}_j = \mathbb{1}(p_j > 0.5)$$

(c) Joint pseudo-label supervision

### Dynamic uncertainty

$$H \xrightarrow{1} U$$

$$\mathbb{1}(H < \min(\mu + \sigma, H_{0.95}))$$

$$\tilde{y}'_u = \tilde{y}_u \odot U$$