

$$h_k^{(H+1)}(x, w) = [\bar{x} \circ \bar{\sigma}(x, w)]^\top \bar{w}_k$$

$$[\bar{x}_i \circ \bar{\sigma}(x_i, w^{S_m})]$$

$$z_i = [\bar{x}_i \circ \bar{\sigma}(x_i, w^{S_m})]$$

$$G = \mathbb{E}_{x, y \sim P}[zz^\top] - \frac{1}{m} \sum_{i=1}^m z_i z_i^\top$$

$$v = \frac{1}{m} \sum_{i=1}^m y_{ik} z_i - \mathbb{E}_{x, y \sim P}[y_k z]$$