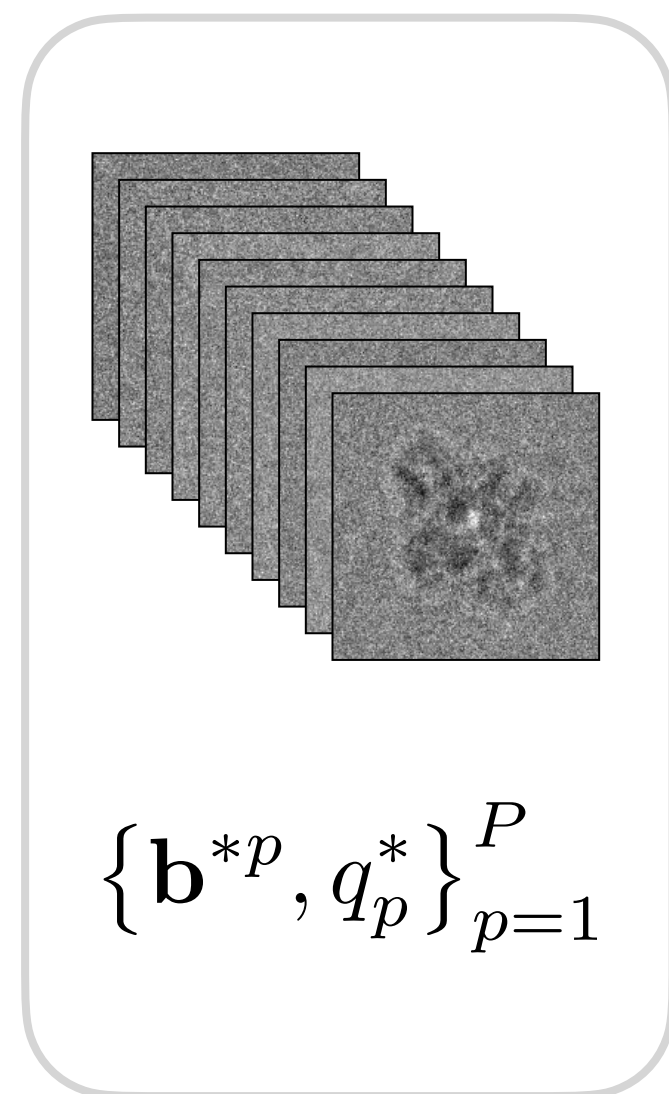


Siamese Neural Network as \hat{d}_b

Training Dataset

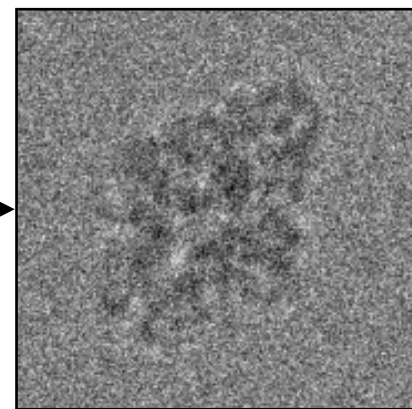


q_i^*

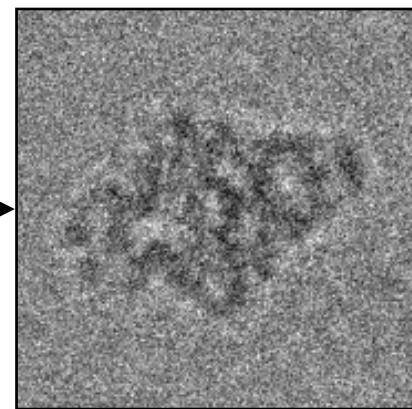
q_j^*

$$d_q(q_i^*, q_j^*) = 2 \arccos(|\langle q_i^*, q_j^* \rangle|)$$

\mathbf{b}^{*i}



\mathbf{b}^{*j}



Sister CNN #1

\mathcal{G}_w

$\mathcal{G}_w(\mathbf{b}^{*i})$

Same Structure/Weights

Sister CNN #2

\mathcal{G}_w

$\mathcal{G}_w(\mathbf{b}^{*j})$

Features Similarity

$$e_w^{i,j} = F(\mathcal{G}_w(\mathbf{b}^{*i}), \mathcal{G}_w(\mathbf{b}^{*j}))$$

$e_w^{i,j}$

Loss Function

$$\mathcal{J}(w) = |e_w^{i,j} - d_q(q_i^*, q_j^*)|^2$$

Loss