One step of stochastic gradient descent produced: $W_{\boldsymbol{i-j}} \to W'_{\boldsymbol{i-j}}$
Symmetrize in 4-fold rotations. Loop over all displacements $\boldsymbol{i-j}$.

$$W''_{\boldsymbol{i-j}} \leftarrow \frac{1}{4}(W'_{\boldsymbol{i-j}} + W'_{R(\boldsymbol{i-j})} + W'_{R^2(\boldsymbol{i-j})} + W'_{R^3(\boldsymbol{i-j})}).$$

Symmetrize in reflections:

$$W'''_{\boldsymbol{i-j}} \leftarrow \frac{1}{2}(W''_{\boldsymbol{i-j}} + W''_{\boldsymbol{j-i}}).$$

Final result is $W'''_{\boldsymbol{i-j}}$, can be written into new $W_{\boldsymbol{i-j}}$.