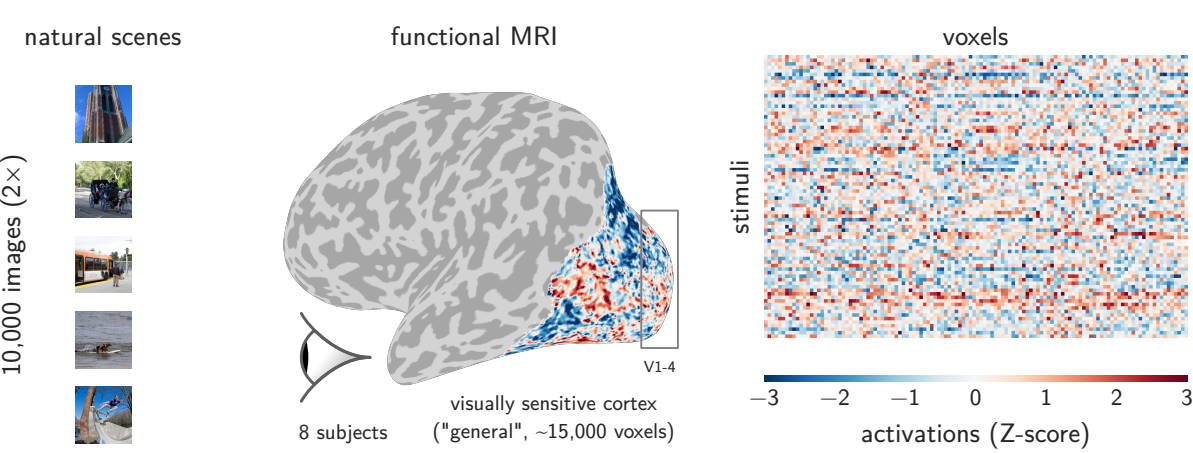

1 Learn the latent dimensions shared between two sets of neural responses on training data

$$\begin{aligned}\operatorname{cov}\left(X_{\text{train}}, Y_{\text{train}}\right) &= X_{\text{train}}^{\top} Y_{\text{train}} / n_{\text{train}} \\ &= U_{\text{train}} \Sigma_{\text{train}} V_{\text{train}}^{\top}\end{aligned}$$

2 Compute the spectrum of variance along the latent dimensions on held-out test data

$$\begin{aligned}\Sigma_{\text{test}} &= \operatorname{cov}\left(X_{\text{test}} U_{\text{train}}, Y_{\text{test}} V_{\text{train}}\right) \\ &= \left(X_{\text{test}} U_{\text{train}}\right)^{\top} \left(Y_{\text{test}} V_{\text{train}}\right) / n_{\text{test}}\end{aligned}$$