raw T1 images of training subjects

GM maps of training subjects

tissue segmentation

normalize to template space

warped GM maps of training subjects:

estimation of regression parameters using healthy controls

\[ A = Q_\theta^{-1} Y \]

\[ \hat{y}_i = q^* A \]

\[ \hat{Y} = [\hat{y}_1, \hat{y}_2, \cdots, \hat{y}_N] \]

\[ \hat{y}^* = q^* A \]

\[ A = [a_1, a_2, \cdots, a_N]^T \]

\[ y^* = q^* A \]

estimated GM maps of training subjects - subtract input training data (adjusted GM)

IXI template

raw T1 image of test subject

GM map of test subject

tissue segmentation

normalize to template space

warped GM maps of test subject:

estimation of regression parameters using healthy controls

\[ A = Q_\theta^{-1} Y \]

\[ \hat{y}_i = q^* A \]

\[ \hat{Y} = [\hat{y}_1, \hat{y}_2, \cdots, \hat{y}_N] \]

\[ \hat{y}^* = q^* A \]

\[ A = [a_1, a_2, \cdots, a_N]^T \]

\[ y^* = q^* A \]

input test data (adjusted GM)

predicted GM maps of test subject

predict class label

\[ \hat{c}^* \in \{ \text{AD, FTD, LBD, HC} \} \]

train SVM

prediction: \[ \hat{c}^* \in \{ \text{AD, FTD, LBD, HC} \} \]

SVM model