Notation	Description
X	Entire training set
X_c	All samples of the cth class
x_i	The ith sample of X
q	Dimension of a sample
N_c	Number of samples of the cth class
M	Number of classes
L	Number of samples of X
x	A testing sample
$\dot{X}$	Matrix-based quaternion
$\dot{x}$	Vector-based quaternion