2 Fisher's Linear Discriminant

Discriminant analysis, we need to find projected directions of the data that can discriminate the embedded patterns.

We have a set of n d-dimensional samples $(\vec{x_1}, ..., \vec{x_n})$ having two subsets D_1 and D_2, with n_1 and n_2 samples respectively.

$$y = \vec{w}^T \vec{x} \tag{19}$$

such that y is a linear combination of the components of $\vec{x}$.