Linear Descriminant Analysis

- from this
- **Between Class Scatter** = Sb
- **Within Class Scatter** = Sw
- Linear Descriminant Analysis searches for a projection of dataset A, that maximizes the Sb/Sw ratio.
- The goal is to project / transform dataset A using a transformation matrix w such that the ratio between class between scatter (Sb) and within class scatter (Sw) is maximized.
- The transformed dataset is

$$Y = A * w^t$$

What is *Scatter Within*

- $$S_W$$

What is *Scatter Between*

- $$S_B$$

How to do the transformation

- We know that we want to minimize

$$\frac{S_B}{S_W}$$

- And we want to transform this like

$$Y = w^T * X$$