



# Supervised Learning

## 1 Why

We think there is a functional relationship between elements of one set and another set.

## 2 Definition

Let  $\mathcal{U}$  be a set and  $\mathcal{V}$  be a set. We have a data set  $(u^1, \dots, u^n)$  in  $\mathcal{U}$  and a data set in  $(v^1, \dots, v^n)$  in  $\mathcal{V}$ . We view  $u^i$  as functionally related to  $v^i$ . We view these as pairs  $(u^i, v^i)$  in  $\mathcal{U} \times \mathcal{V}$  and speak of one data set  $((u^1, v^1), \dots, (u^n, v^n))$  in  $\mathcal{U} \times \mathcal{V}$ .