



# Nearest Neighbor Predictors

## 1 Why

We might expect similar precepts to lead to similar postcepts.

## 2 Definition

Consider a set of precepts and a similarity function on them. The n

### 2.1 Notation

Let  $D = ((a^1, b^1), \dots, (a^n, b^n))$  be a dataset in  $A \times B$ , where  $A$  and  $B$  are non-empty sets. Let  $f$  be the nearest neighbor inductor. Then  $\iota(D)(x)$  is Let  $n$  be a natural number. Let  $\Xi$  be a length  $n$  paired record sequence in  $\mathcal{U} \times \mathcal{V}$ ; so

$$\Xi = ((u^1, v^1), \dots, (u^n, v^n))$$

with  $u^i \in \mathcal{U}$  and  $v^i \in \mathcal{V}$  for  $i = 1, \dots, n$ .

The nearest neighbor induction associates  $\Xi$  with the function  $f_\Xi$  such that

$$f_\Xi(u) = v^j$$

where  $j < n$  is the largest integer such that

$$d(u, u^j) = \min_i \{d(u, u^i)\}.$$