Approximators

1 Why

We are given an object of some set, and want to find an element (in some subset) which is most similar to it.

2 Definition

Consider a non-empty set, one of its subsets, and a similarity function on it. An *approximator* of an element of the set is any element of the subset. So we call the subset the set of *approximators*. One approximator may be more similar than another. An *optimal* approximator is a minimizer of the similarity function over the set of approximators.

2.1 Notation

Let B be a non-empty set. Let $A \subset B$. Let $d : B \times B \to \mathsf{R}$ be a similarity function. For $b \in B$, every $a \in A$ is an approximator of b. An optimal b is a solution of

$$\begin{aligned} \text{minimize} \quad & d(b, a) \\ \text{subject to} \quad & a \in A. \end{aligned}$$