

MAXIMUM LIKELIHOOD DISTRIBUTIONS

Why

We want to summarize a dataset with a distribution.

Overview

The likelihood (or distribution likelihood) of a probability distribution $p:A\to \mathbf{R}$ on a dataset $a^1,\ldots,a^n\in A$ is $\prod_{i=1}^n p(a^i)$. A maximum likelihood distribution $p^*:A\to \mathbf{R}$ is one which maximizes the likelihood over all distributions on A.

We call the correspondence between datasets and distributions the *maximum likelihood algorithm*. We say that we are selecting the distribution according to the *maximum likelihood principle*. In general, we call any function from datasets to distributions a *distribution selector*.

