Sampling the Bernoulli

$W \sim \text{Bernoulli}(\theta) = \theta^{w} \cdot (1-\theta)^{1-w}$

Weather (W) → Bad, Good

$\downarrow$

How to sample w

↳ How to create a dataset

$W \in \{\underset{0}{\text{Bad}}, \underset{1}{\text{Good}}\}$

$D = \{\text{Bad}, \text{Good}, \text{Bad}, \dots\}$

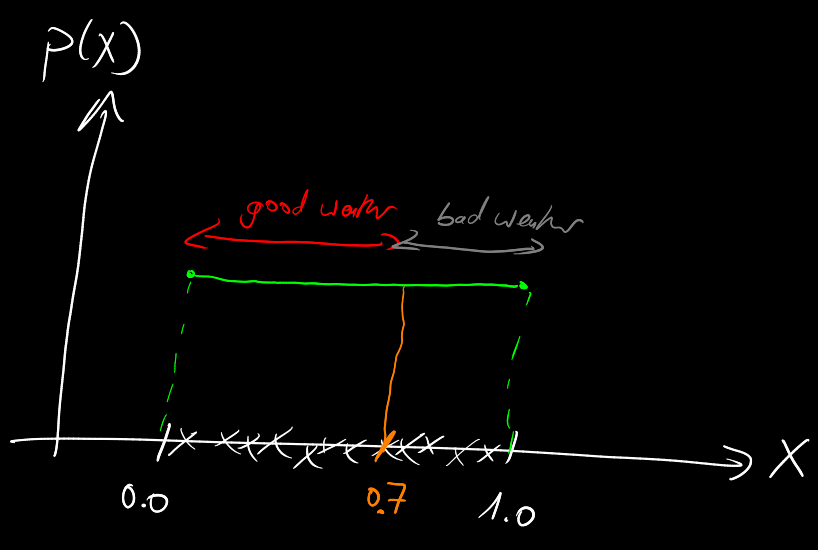
Sampling: Random Variable → Random Variate (an instantiation)

W (capital letter)

w (lowercase letter)

example: $\theta = 0.7$ (70% chance of good weather)

Source of randomness : Uniform random number generators



equally likely

$\text{Born}(\theta) \sim w = \begin{cases} 1, & x \le \theta \\ 0, & x > \theta \end{cases}$ $\quad x \sim \text{Uniform}(0.0, 1.0)$

e.g. $D_x = \{0.3, 0.9, 0.75, 0.4, 0.7\}$

$\downarrow$

$D_w = \{1, 0, 0, 1, 1\}$