

Bayes Coins A

We have a bag of old coins in the different phase of wearing out, coins of the same values can have different size. Value of coin is readable. We have to sort coins in the bag by their value. We know that in bag are coins with value of 1, 2 and 5 crowns. As loss function at decision choose: $l(s,d) = |hd-hs|$ where hs is value of the coin and hd is our decision about value of the coin.

We have at our disposal a weighing machine, which weights with a 5 gram precision. We will try to estimate the weight of individual values of coins based on experiment. We will randomly choose 100 coins, weight them and write down their values. We will create a training multiset. After the weighing of the training multiset, we get this table:

s/x	5 g	10 g	15 g	20 g	25 g	Suma
1 CZK	9	16	4	1	0	30
2 CZK	7	2	6	7	8	30
5 CZK	6	1	5	14	14	40
Suma	22	19	15	22	22	100

P(s,x)	5 g	10 g	15 g	20 g	25 g	Suma
1 CZK	0.09	0.16	0.04	0.01	0.0	0.3
2 CZK	0.07	0.02	0.06	0.07	0.08	0.3
5 CZK	0.06	0.01	0.05	0.14	0.14	0.4
Suma	0.22	0.19	0.15	0.22	0.22	1

- How many strategies are there?
- We have found out the weight of the new coin, it is 15 grams. Into which class will you put this coin, write down your calculation.