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E-Commerce

Assignment 3 Dry

PART 1 :

1) Distribution is constant : We have a « binary » search approach. We launch a research on a interval [0, 1] and we propose each time the middle value. If it is accepted, we define a new interval to search on. We don't to search on all rounds. We estimated at each percent of the number of total rounds we do not search anymore. From this time that we noted k in our script, we only propose the last accepted value.

2) Distribution is Beta(a, b) with a and b knowns : Here, we partitioned the interval [0, 1] in a discrete one of 1000 equidistant points (0.001, 0.002, 0.003, …) and we looked at the expected revenue on one round for each of these propositions with the corresponding distribution. Each round, we propose the price that maximizes our expected revenue on one round.

3) Distribution is Beta(a, b) with a and b unknowns : We first assume a prior on alpha et beta, the two unknown parameters : alpha = 1 and beta = 1. Each time we sell, we update the prior and increment alpha by 0.9 and each time we do not sell we decrease beta by 1. We want to obtain a under-estimation of the real distribution such as we avoid overpricing. This is why we increment alpha by 0.9 and not 1. At each round we propose a sample value of the current estimated distribution and lower it in order to avoid overpricing again. We decided that from 70% of the rounds, we have enough knowledge on the distribution and we do not update it anymore.