Competition: "Bets of life"

$$p = \mathfrak{b}$$

Bayesian methods labs

Abstract

It is a problem of inference with bets in which the prize is distributed in the proportion of the resources that people have at the end of the betting process.

Prize A prize, equivalent to X dollars, will be distributed proportionally to the "life" that each individual has at the end of the game[1]. Individuals start with a unit of life, $\omega = 1$. The award does not become effective if life does not reach a growth rate greater than 10% per time step.

Inference The inference problem is a four-door Monty Hall in which the person hiding the gift has a bias that changes over a 365-day cycle. Each individual will receive a data set with the position of the gifts in 2190 consecutive days (six complete cycles) starting on the day of the individual's choice (a number between 1 and 365).

Bets Following the Monty Hall idea, at each time step, the person will be able to choose a box and then another of the boxes in which the gift is not in will be shown. Unlike Monty Hall, the goal is not to choose a single box, but to bet the whole life, distributing it in proportions b_h among the different hypotheses h, such that $\sum_h b_h = 1$. Mother nature offers a payoff $q = 2.75$ for each of the hypotheses. Then, at each time step, the life is updated as, $\omega_{t+1} = \omega_t b_r q$, where r index is the actual position of the gift at time step t. After each time step, individuals can give and receive resources.

Genetics The deliverable consists of a piece of software (Python, Julia or R) with the functions:

1. `elegir_caja(tiempo)`, that given the time `tiempo` (positive integer) returns the chosen box (an integer between 1 and 4);
2. `apostar_y_repartir(pista,tiempo)`, that given the box without a gift `pista` (an integer between 1 and 4) and the time `tiempo` (positive integer) returns: the bet per box (list of length 4 with non-negative floats that add up to 1); and the reciprocity policy (a dictionary that has as keys the identifiers of the people to whom resources are donated, and as value the proportion of the resources that are donated to them).

Rites Registrations will be received until August 1, Pachamama's Day. Submissions are received until October 12, the beginning of colonial-modernity. The results are announced on December 10, 40 years after the democratic hope in Argentina.

Help Read "Properties of the epistemic-evolutionary cost function" [1] and cooperate.

[1] `https://metodosbayesianos.github.io/archivos/2023/properties.pdf`

[1] The payment of the prize is made by international transfer to an IBAN account in one of the following currencies: ARG - USD - EUR - CHF - GBP - JPY - AUD - CAD - SEK - HKD - NOK - DKK - AED - SGD. The exchange between these currencies is free of charge. A fixed cost of 4 dollars plus the additional cost included by the banks involved in the transfer must be deducted from the transfer.