

# Thompson Sampling Algorithm

**Step 1.** At each round  $n$ , we consider two numbers for each ad  $i$ :

- $N_i^1(n)$  - the number of times the ad  $i$  got reward 1 up to round  $n$ ,
- $N_i^0(n)$  - the number of times the ad  $i$  got reward 0 up to round  $n$ .

**Step 2.** For each ad  $i$ , we take a random draw from the distribution below:

$$\theta_i(n) = \beta(N_i^1(n) + 1, N_i^0(n) + 1)$$

**Step 3.** We select the ad that has the highest  $\theta_i(n)$ .