Algorithm 3 TS Algorithm

Initialize Beta parameter $(\alpha_j, \beta_j), j \in \{1, 2, 3\}$

for $t = 1, 2 \ldots, N$ **do**

    # Sample model

    for $j \in \{1, 2, 3\}$ **do**

        Sample $\widehat{\theta}(j) \sim \mathrm{Beta}(\alpha_j, \beta_j)$

    end for

    # Select and pull the arm

$$I(t) \leftarrow \arg\max_{j \in \{1,2,3\}} \widehat{\theta}(j)$$

    # Update the distribution

$$\alpha_{I(t)} \leftarrow \alpha_{I(t)} + r_{I(t)}$$
$$\beta_{I(t)} \leftarrow \beta_{I(t)} + 1 - r_{I(t)}$$

end for