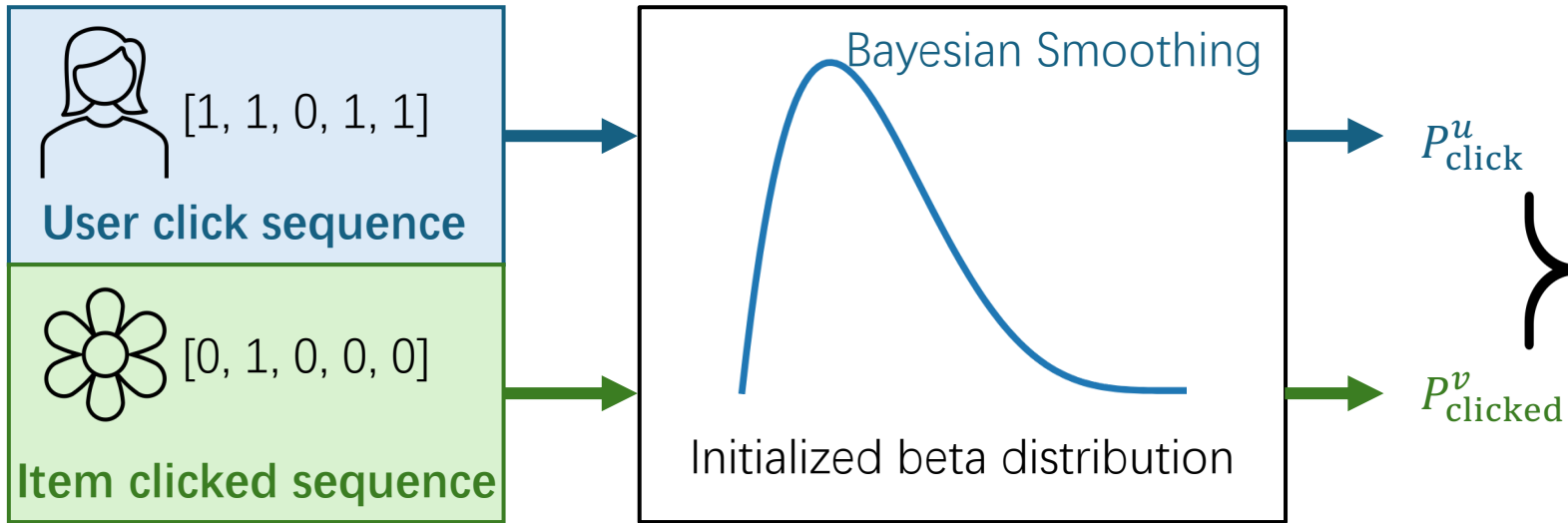


Step 1: Get personalized personalized posterior probabilities (Sec. 4.1)



Step 2: Extend preference pairs (Sec. 4.2)

$$P_{\text{agg}} + y = z$$

P_{agg} : aggregated probability
 y : binary click label
 z : augmented preference score

Step 3: Beyond Binary Preference Ranking (Sec. 4.3)

Jointly optimize calibration $\mathcal{L}_{\text{cal}}(s, y)$
and ranking $\mathcal{L}_{\text{rank}}(s, z)$

