Proposed Method

Interest Sustainability Prediction

- First divide D chronologically such that $D = D_f \| D_b$.
- D_f, D_b denote the front, back part
- All interactions in D_f are precedent to any interaction in D_b.
- $\|$ is concatenation operation.

- The divided data D_f and D_b are used for building input and labels:
  - $Input : i,$ item i that appears in D_f.
  - $Label : y_i = \begin{cases} 1, & \text{if } i \text{ appears in } D_b. \\ 0, & \text{otherwise.} \end{cases}$
- The goal is to predict whether item i, which appears in D_f, will be consumed in the future.

Proposed Method

Interest Sustainability Prediction

- Train a parameterized model M under a supervised-learning framework with binary cross entropy loss:
  - $L_{IS} = \sum_{i}^{|I|} y_i log(M(f_i; \theta)) + (1 - y_i) log(1 - M(f_i; \theta))$
  - θ: model parameters
  - f_i: feature representation of item i
- ISS is defined by the output of the trained model:
  - $p_i = M(f_i; \theta)$
  - $p_i \in \mathbb{R}$: ISS of item i in the form of probability.