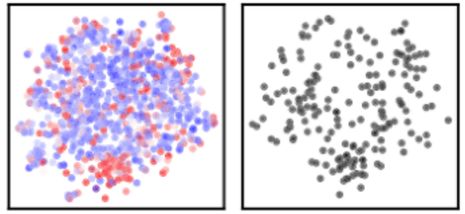
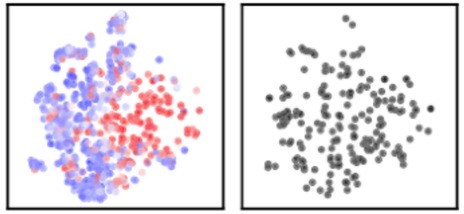
Experiments

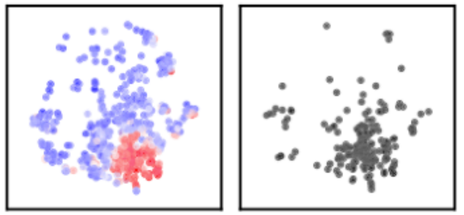
Comparison of Learned Representations



(a) HGN



(b) SML



(c) CRIS

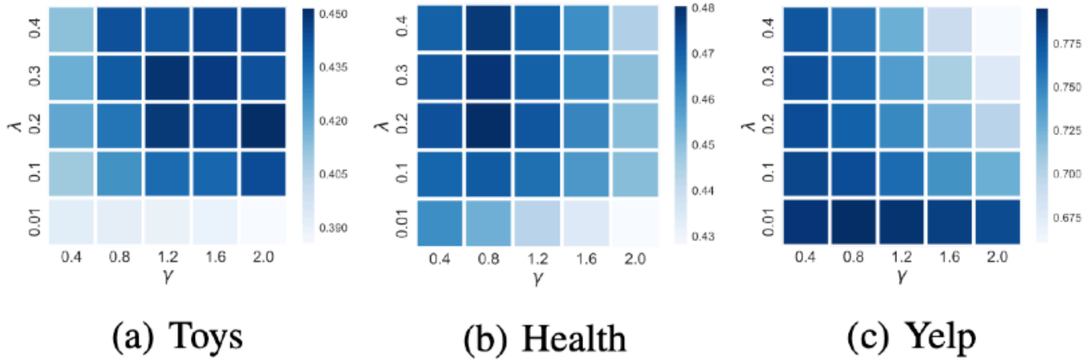
- Visualize the item representations learned by SML,HGN, CRIS to investigate whether they can consider the interest sustainability of items.
- Observe the baseline methods (HGN, SML) suffer from distinguishing the item with respect to their ISSs. Thus, items that appear over the representation space in test time.
- This result indicates that modeling only user-item interactions is limited to capture whether each item will be consumed in the future.
- CRIS successfully captures the interest sustainability, appear more clearly clustered that those baselines.
- Thus, we conclude that ISSs of items are essential signal that enables system to consider how users' interest will sustain in the future.

$$L^P(\theta) = \sum_{(u,i^+)\in P} \sum_{(u,i^-)\notin P} L_C^P(u, i^+, i^-) + \lambda L_S^P(u, i^+, i^-)$$

$$Score(u, i) = -\{d(\mathrm{C}, \mathrm{T}_{u,i}) + \gamma d(\mathrm{S}, \mathrm{T}_{u,i})\}$$

Experiments

Effect of Balancing Coefficients



(a) Toys (b) Health (c) Yelp

- Illustrates the sensitivity of the balance coefficients λ and γ:
  - CRIS achieves the best performance with small λ but large γ, which indicates the importance of the ISSs.
  - Conjecture the inconsistency between training and evaluation time is caused by the noise in the ISSs.
  - While training, CRIS depends less on the L_S^P to avoid overfitting to noisy ISSs.
  - In the evaluation time, CRIS largely depends on the denoised ISSs when determining the recommendation scores.
- CRIS can handle the noise in the ISSs by adjusting the balance coefficients λ and γ
- λ less than 0.5 is the best, reaffirms that ISSs should modeled with L_C^P to learn users' personalized preference.