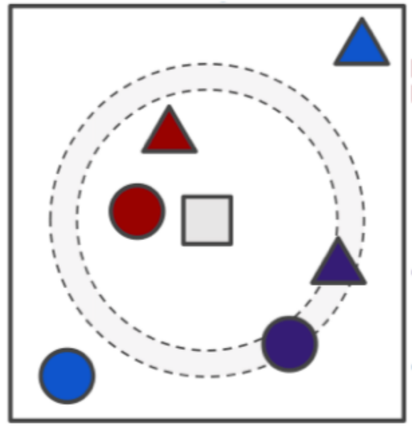
Proposed Method

Metric Learning with Interest Sustainability Score



(b) CRIS^{reg}

- The final loss is a linear combination of both objectives:

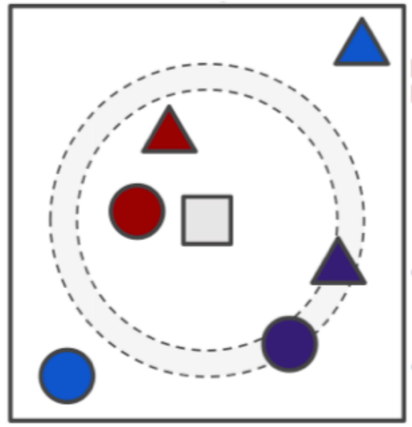
$$L = \sum_{(u,i^+)\in P} \sum_{(u,i^-)\notin P} L_C(u, i^+, i^-) + \lambda L_S(u, i^+, i^-)$$

  - P: set of user-item interactions, λ: balancing coefficient, L_S: regularization on metric learning framework.

- Given the combination of both objectives, the metric learning method can build a representation space with considering both whether users liked items (by L_C) and how users' interest in the items sustain in the future (by L_S), name this method as CRIS^{reg}

Proposed Method

Prototype Learning



(b) CRIS^{reg}

- A limitation in the metric learning framework with the ISS, there can be potential conflicts between two objectives because an anchor (i.e. a user) is shared to optimize both objectives, L_C and L_S.

- For example, positive item of a user can have low ISS, thus consequently the positive item can be distant from the user. (Fig.4b) Therefore, modeling the ISS can prevent the recommendation system from fully learning the user's preference for items.