**NASM: Nonlinearly Attentive Similarity Model for Recommendation System via Locally Attentive Embedding**

**Abstract:**

Recommendation system, as a core service for many customer-oriented online services, is employed to predict the personalized rating of users on their potentially preferable items. In modern industrial settings, an item-based collaborative ﬁltering (item-based CF) method has been long popular owing to its excellent interpretability and high efﬁciency in the real-time personalized recommendation. In this model, the current target item is recommended according to the interacted similarity from the user’s proﬁle, which implies that the key of item-based CF is in the estimation of historical item similarity. Early studies usually utilize statistical measures including cosine similarity and Pearson correlation coefﬁcient to estimate similarity with low accuracy caused by lacking optimization tailed. Recently, there are some learning-based models attempting to learn item similarity by optimizing a recommendation-aware loss function. However, these efforts are mainly concentrated on the application of the shallow linear model, and relative works that deploy some deep learning components for item-based CF are scarce. In this paper, we propose a nonlinearly attentive similarity model (NASM) for item-based CF via locally attentive embedding by introducing local attention and novel nonlinear attention to capture local and global item information, simultaneously. The NASM is based on a neural attentive item similarity (NAIS) model and further achieves signiﬁcantly superior performance. The experimental results demonstrate that the NASM achieves more competitive recommendation performance in terms of hit ration (HR) and the normalized discounted cumulative gain (NDGC) in comparison with other state-of-the-art recommendation models.

**SYSTEM REQUIREMENTS:**

**HARDWARE REQUIREMENTS:**

* System : Pentium Dual Core.
* Hard Disk : 120 GB.
* Monitor : 15’’ LED
* Input Devices : Keyboard, Mouse
* Ram : 1 GB

**SOFTWARE REQUIREMENTS:**

* Operating system : Windows XP/UBUNTU.
* Implementation : NS2
* NS2 Version : 2.28
* Front End : OTCL (Object Oriented Tool Command  Language)
* Tool : Cygwin (To simulate in Windows OS)