**Clustering-Based Collaborative Filtering Using an Incentivized/Penalized User Model**

**Abstract:**

Giving or recommending appropriate content based on the quality of experience is the most important and challenging issue in recommender systems. As collaborative ﬁltering (CF) is one of the most prominent and popular techniques used for recommender systems, we propose a new clusteringbased CF (CBCF) method using an incentivized/penalized user (IPU) model only with the ratings given by users, which is thus easy to implement. We aim to design such a simple clustering-based approach with no further prior information while improving the recommendation accuracy. To be precise, the purpose of CBCF with the IPU model is to improve recommendation performance such as precision, recall, and F1 score by carefully exploiting different preferences among users. Speciﬁcally, we formulate a constrained optimization problem in which we aim to maximize the recall (or equivalently F1 score) for a given precision. To this end, users are divided into several clusters based on the actual rating data and Pearson correlation coefﬁcient. Afterward, we give each item an incentive/penalty according to the preference tendency by users within the same cluster. Our experimental results show a signiﬁcant performance improvement over the baseline CF scheme without clustering in terms of recall or F1 score for a given precision.

**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)