

# **RECOMMENDER SYTEM USING CLOUD COMPUTING WITH APPLICATIONS TO COMPUTATIONAL ADVERTISING**

## **ABSTRACT**

Recommender Systems is a technology that E-commerce vendors have adopted so that customer can receive suggestions on the items that they will find interesting. The system is a valuable assistant to the customer's purchase decisions.

The biggest challenges of Recommender Systems are scalability and accuracy. Traditionally, Recommender Systems have been designed using a centralized architecture. This inhibits rapid scalability and result in bottlenecks when the data becomes very big. New age technology like Cloud Computing can handle massive data and can support enormous processing. Enterprises have adapted Cloud Computing platforms for massive data processing. However many of them have reported that the analytic techniques are lacking in capabilities when processing big data.

In this thesis, focus is on designing Decentralized Recommender Systems so that the advantages of Cloud Computing platforms can be fully realized. The concept of distribution of labor from biologically inspired techniques is adopted. New algorithm inspired from artificial life has been devised for Recommender Systems. Metaheuristics techniques like Genetic Algorithm and Particle Swarm Optimization have been modeled to address popular

problem like Rating Prediction and finding the Top-N items in the context of Recommender Systems. Applications to the concept of artificial life and evolutionary algorithm inspired Recommender Systems have been used in a practical scenario like recommending relevant advertisement to online users.

The following challenges in Recommender Systems were addressed:

- Categorizing user Interests and Preferences
- Rating Prediction with limited information
- Identifying users with common characteristics even if they do not have enough items rated in common
- Generating Top-N items for a given user using Collaborative Cloning
- Collaborative Advertisement systems design for Computational Advertising
- Addressing systems security issues when using Cloud Computing Platform.

We have tried to give a new way of looking into Recommender System using principles of artificial life. We hope this work will contribute and motivate future research in distributed Recommender Systems.