Advances in Intelligent Systems and Computing 321

Rajkumar Buyya
Sabu M. Thampi *Editors*

Intelligent Distributed Computing

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Intelligent Distributed Computing

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Preface

The third International Symposium on Intelligent Informatics (ISI-2014) provided a forum for sharing original research results and practical development experiences among experts in the emerging areas of Intelligent Informatics. This edition was co-located with third International Conference on Advances in Computing, Communications and Informatics (ICACCI-2014), September 24–27, 2014. The Symposium was hosted by Galgotias College of Engineering & Technology, Greater Noida, Delhi, India.

ISI-2014 had two tracks: 'Advances in Intelligent Informatics' and a special track on 'Intelligent Distributed Computing'. In response to the call for papers, 134 papers were submitted for the Intelligent Informatics Track and 63 submissions for the Intelligent Distributed Computing track. All the papers were evaluated on the basis of their significance, novelty, and technical quality. Each paper was rigorously reviewed by the members of the program committee. This book contains a selection of refereed and revised papers of Intelligent Distributed Computing Track originally presented at the symposium. In this track, 18 regular papers and 7 short papers were accepted. The peer-reviewed papers selected for this Track cover several Distributed Computing and related topics including Peer-to-Peer Networks, Cloud Computing, Mobile Clouds, Wireless Sensor Networks, and their applications.

Many people helped to make ISI-2014 a successful event. Credit for the quality of the conference proceedings goes first and foremost to the authors. They contributed a great deal of effort and creativity to produce this work, and we are very thankful that they chose ISI-2014 as the place to present it. Thanks to all members of the Technical Program Committee, and the external reviewers, for their hard work in evaluating and discussing papers. We wish to thank all the members of the Steering Committee and Organising Committee, whose work and commitment were invaluable. Our most sincere thanks go to all keynote speakers who shared with us their expertise and knowledge. The EDAS conference system proved very helpful during the submission, review, and editing phases.

We thank the Galgotias College of Engineering & Technology, Greater Noida, Delhi for hosting the conference. Sincere thanks to Suneel Galgotia, Chairman, GEI, Dhruv Galgotia, CEO, GEI, R. Sundaresan, Director, GCET and Bhawna Mallick, Local Arrangements Chair for their valuable suggestions and encouragement.

We wish to express our thanks to Thomas Ditzinger, Senior Editor, Engineering/Applied Sciences Springer-Verlag for his help and cooperation.

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Customization of Recommendation System Using Collaborative Filtering Algorithm on Cloud Using Mahout

Thangavel Senthil Kumar and Swati Pandey

Abstract. Recommendation System helps people in decision making regarding an item/person. Growth of World Wide Web and E-commerce are the catalyst for recommendation system. Due to large size of data, recommendation system suffers from scalability problem. Hadoop is one of the solutions for this problem. Collaborative filtering is a machine learning algorithm and Mahout is an open source java library which favors collaborative filtering on Hadoop environment. The paper discusses on how recommendation system using collaborative filtering is possible using Mahout environment. The performance of the approach has been presented using Speedup and efficiency.

1 Introduction

In fast growing world, since time is on its heel, people do not want to go shop by shop and buy the best item according to their requirement. To save time, everyone wants to buy things in home in reasonable cost. They prefer online shopping, online suggestion for an item, so that they can take a decision on a particular item which may be suitable for a particular. In such scenario Recommendation System plays a vital role. When the questions are "Whether I will like this item", "I want to buy an item of a particular type which suits according to my taste", "Can you suggest me an item which we may like?", the feasible answers can be obtained through recommendation system. It helps in recommending items of a similar type as well as predicting an item, whether it will be liked by user or not.

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For recommendation, our proposed system uses collaborative filtering machine learning algorithm. Collaborative filtering (CF) is a machine learning algorithm which is widely used for recommendation purpose. Collaborative filtering finds nearest neighbor based on the similarities. The metric of collaborative filtering is the rating given by the user on a particular item.

Different users give different ratings to items. Users, who give almost same rating to items, are the nearest neighbors. In case of User based collaborative filtering, based on the ratings given by the users, nearest neighbors has been find. Item based collaborative filtering predicts the similarity among items. To recommend an item, items which are liked by the user in his past have been found. Item which is similar to those items has been recommended [10].

Internet contains a huge volume of data for recommendation purpose. Due to size of data, if recommendation computation has been done in single system, then performance may degrade, and we cannot find an efficient solution. Hence we require distributed environment so that computation can be increased and performance of recommendation system gets improve. Cloud is a Distributed System. An open source cloud environment Hadoop provides distributed environment [21]. Due to Map-Reduce programming, it provides result efficiently and effectively in less amount of time. Proposed system has been modeled on Hadoop. Mahout is an open source java library which favors Collaborative Filtering. Mahout favors Hadoop for recommendation [13]. Cloud computing relies on sharing of resources to achieve coherence and economies of scale, similar to a utility (like the electricity grid) over a network. At the foundation of cloud computing is the broader concept of converged infrastructure and shared services. Cloud has emerged as a new face of fast and efficient computing. It provides a wide variety of benefits like scalability of computing power, global accessibility of data and services, efficient storage of data etc. the cloud has extended its reach to many sectors and is intensively used in sectors with necessity for high performance computing, one such sector is entertainment. The term "cloud computing" is mostly used to sell hosted services in the sense of application service provisioning that run client server software at a remote location. Such services are given popular acronyms like 'SaaS' (Software as a Service), 'PaaS' (Platform as a Service), 'IaaS' (Infrastructure as a Service), 'HaaS' (Hardware as a Service) and finally 'EaaS' (Everything as a Service). End users access cloud-based applications through a web browser, thin client or mobile app while the business software and user's data are stored on servers at a remote location. Examples include Amazon Web Services and Google App engine, which allocate space for a user to deploy and manage software "in the cloud". This project utilizes two services provided by cloud namely platform as a service (PaaS) and infrastructure as a service (IaaS).

Rest of the paper has been arranged in different sections. Section 2 briefly describe about related work that has been done. Section 3 elaborates the proposed model for Recommendation System. Section 4 describes data set and results. Section 5 focuses on conclusion and future enhancement.