

Suresh Chandra Satapathy
Vikrant Bhateja
Amit Joshi *Editors*

Proceedings of the International Conference on Data Engineering and Communication Technology

ICDECT 2016, Volume 2

Advances in Intelligent Systems and Computing

Volume 469

Series editor

Janusz Kacprzyk, Polish Academy of Sciences, Warsaw, Poland
e-mail: kacprzyk@ibspan.waw.pl

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Amit Joshi
Editors

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ICDECT 2016, Volume 2

 Springer

Editors

Suresh Chandra Satapathy
Department of CSE
Anil Neerukonda Institute of Technology
and Sciences
Visakhapatnam, Andhra Pradesh
India

Amit Joshi
Sabar Institute of Technology
Tajpur, Sabarkantha, Gujarat
India

Vikrant Bhateja
Shri Ramswaroop Memorial Group of
Professional Colleges (SRMGPC)
Lucknow, Uttar Pradesh
India

ISSN 2194-5357 ISSN 2194-5365 (electronic)
Advances in Intelligent Systems and Computing
ISBN 978-981-10-1677-6 ISBN 978-981-10-1678-3 (eBook)
DOI 10.1007/978-981-10-1678-3

Library of Congress Control Number: 2016944918

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Preface

The First International Conference on Data Engineering and Communication Technology (ICDECT 2016) was successfully organized by Aspire Research Foundation, Pune during March 10–11, 2016 at Lavasa City, Pune. The conference has technical collaboration with Div-V (Education and Research) of Computer Society of India. The objective of this international conference was to provide opportunities for the researchers, academicians, industry persons, and students to interact and exchange ideas, experience and gain expertise in the current trends and strategies for information and intelligent techniques. Research submissions in various advanced technology areas were received and after a rigorous peer-review process with the help of program committee members and external reviewer, 160 papers in separate two volumes (Vol-I: 80, Vol-II: 80) were accepted. All the papers are published in Springer AISC series. The conference featured seven special sessions on various cutting-edge technologies which were conducted by eminent professors. Many distinguished personalities like Dr. Ashok Deshpande, Founding Chair: Berkeley Initiative in Soft Computing (BISC)—UC Berkeley CA; Guest Faculty: University of California Berkeley; Visiting Professor: New South Wales University, Canberra and Indian Institute of Technology Bombay, Mumbai, India; Dr. Parag Kulkarni, Pune; Prof. Amit Joshi, Sabar Institute, Gujarat; Dr. Swagatam Das, ISI, Kolkata, graced the event and delivered talks on cutting-edge technologies.

Our sincere thanks to all Special Session Chairs (Dr. Vinayak K. Bairagi, Prof. Hardeep Singh, Dr. Divakar Yadav, Dr. V. Suma), Track Manager (Prof. Steven Lawrence Fernandes) and distinguished reviewers for their timely technical support. Thanks are due to ASP and its dynamic team members for organizing the event in a smooth manner. We are indebted to Christ Institute of Management for hosting the conference in their campus. Our entire organizing committee, staff of CIM, student volunteers deserve a big pat for their tireless efforts to make the event a grand success. Special thanks to our Program Chairs for carrying out an immaculate job. We would like to extend our special thanks here to our publication chairs doing a great job in making the conference widely visible.

Lastly, our heartfelt thanks to all authors without whom the conference would never have happened. Their technical contributions to make our proceedings rich are praiseworthy. We sincerely expect readers will find the chapters very useful and interesting.

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About the Editors

Dr. Suresh Chandra Satapathy is currently working as Professor and Head, Department of Computer Science and Engineering at Anil Neerukonda Institute of Technology and Sciences (ANITS), Andhra Pradesh, India. He obtained his Ph.D. in Computer Science and Engineering from JNTU Hyderabad and M.Tech. in CSE from NIT, Rourkela, Odisha, India. He has 26 years of teaching experience. His research interests include data mining, machine intelligence, and swarm intelligence. He has acted as program chair of many international conferences and has edited six volumes of proceedings from Springer LNCS and AISC series. He is currently guiding eight scholars for Ph.D. Dr. Satapathy is also a Senior Member of IEEE.

Prof. Vikrant Bhateja is Professor, Department of Electronics and Communication Engineering, Shri Ramswaroop Memorial Group of Professional Colleges (SRMGPC), Lucknow and also the Head (Academics and Quality Control) in the same college. His areas of research include digital image and video processing, computer vision, medical imaging, machine learning, pattern analysis and recognition, neural networks, soft computing, and bio-inspired computing techniques. He has more than 90 quality publications in various international journals and conference proceedings. Professor Bhateja has been on TPC and chaired various sessions from the above domain in international conferences of IEEE and Springer. He has been the track chair and served in the core-technical/editorial teams for the following international conferences: FICTA 2014, CSI 2014 and INDIA 2015 under Springer-ASIC Series and INDIACom-2015, ICACCI-2015 under IEEE. He is associate editor in International Journal of Convergence Computing (IJConvC) and also serving in the editorial board of International Journal of Image Mining (IJIM) under Inderscience Publishers. At present he is guest editor for two special issues received in International Journal of Rough Sets and Data Analysis (IJRSDA) and International Journal of System Dynamics Applications (IJSDA) under IGI Global publications.

Mr. Amit Joshi has an experience of around 6 years in academic and industry in prestigious organizations of Rajasthan and Gujarat. Currently, he is working as Assistant Professor in Department of Information Technology at Sabar Institute in Gujarat. He is an active member of ACM, CSI, AMIE, IEEE, IACSIT-Singapore, IDES, ACEEE, NPA, and many other professional societies. Currently, he is Honorary Secretary of CSI Udaipur Chapter and Honorary Secretary for ACM Udaipur Chapter. He has presented and published more than 40 papers in National and International Journals/Conferences of IEEE, Springer, and ACM. He has also edited three books on diversified subjects including Advances in Open Source Mobile Technologies, ICT for Integrated Rural Development, and ICT for Competitive Strategies. He has also organized more than 25 national and international conferences and workshops including International Conference ETNCC 2011 at Udaipur through IEEE, International Conference ICTCS 2014 at Udaipur through ACM, International Conference ICT4SD 2015 by Springer. He has also served on organizing and program committees of more than 50 conferences/seminars/workshops throughout the world and presented six invited talks in various conferences. For his contribution towards the society, The Institution of Engineers (India), ULC, has given him Appreciation Award on the Celebration of Engineers, 2014 and by SIG-WNs Computer Society of India on ACCE, 2012.

Experimental Analysis on Big Data in IOT-Based Architecture

Anupam Bera, Anirban Kundu, Nivedita Ray De Sarkar and De Mou

Abstract In this paper, we are going to discuss about big data processing for Internet of Things (IOT) based data. Our system extracts information within specified time frame. Data tracker or interface tracks information directly from big data sources. Data tracker transfers data clusters to data controller. Data controller processes each data cluster and makes them smaller after removing possible redundancies. Big data processing is a challenge to maintain data privacy-related protections. Data controller processes big data clusters and sends them through secure and/or hidden channels maintaining data privacy.

Keywords Big data (BD) · Distributed file system (DFS) · Hadoop · Distributed network (DN) · Internet of things (IOT)

1 Introduction

Internet is a great source for information sharing through hypertext documents, applications on World Wide Web (WWW), electronic mail, telephony and peer-to-peer networks. Internet is the framework of cooking massive information. Nowadays, a large number of smart devices are connected to Internet, and con-

A. Bera (✉) · A. Kundu · N.R. De Sarkar · De Mou
Netaji Subhash Engineering College, Kolkata 700152, India
e-mail: drive.abera@gmail.com

A. Kundu
e-mail: anik76in@gmail.com

N.R. De Sarkar
e-mail: nivedita.ray2009@gmail.com

De Mou
e-mail: mou.latu@gmail.com

A. Bera · A. Kundu · N.R. De Sarkar · De Mou
Computer Innovative Research Society, Howrah 711103, West Bengal, India

tinuously transmit massive amount of heterogeneous data. It is a challenging job of processing such huge amount of data in real time. Data should be processed in distributed environment in real time. Data could be stored in offline. Size of data is too large and distributed, that it requires use of BD analytical tools for processing [1]. There is number of different application domains widely used for data streaming, storing and processing. These application domains are difficult to maintain due to size of data and nature of network [2, 3]. User could interact with databases to modify, insert, delete, manage information using modern database software or database management system (DBMS) [4]. BD database activities are included in capture, data noise removal, search, sharing, storage, transfer, visualization, and information privacy [5].

2 Related Works

BD is a collection of large, multidimensional, heterogeneous datasets that becomes difficult to manage on typical database management systems. BD refers to data bundles whose volumes are beyond the scope of traditional database software tools [5, 6]. It is a useful tool to use predictive analytics or certain advanced methodology to extract value from data [7]. Typical database management systems failed to provide storage volumes and efficient data processing due to tremendous growth and massive data volume [5]. In 2012, a researcher “Gartner” has described BD as high volume, high velocity and/or high variety information assets which require new forms of processing for enhanced decision-making, insight discovery, and process optimization [8]. In Hadoop [9] mechanism, JobTrackers [10] have processed a block of data (δx) from distributed storage followed by analysis of data blocks to generate final results for storing into a data file. Hadoop has executed MapReduce algorithms for data processing in parallel fashion on distinct CPU nodes. Hadoop works as follows: (i) Place job to Hadoop for required process; (ii) Hadoop job client submits job to JobTracker; (iii) JobTracker executes task as per MapReduce implementation; (iv) JobTracker stores data into data file.

3 Proposed Work

Our proposed model has two segments as follows: (i) one side actively receives all signals from sensors, and forward it to BD database servers; (ii) other side serves request from enterprise personnel for data analysis.

System receives query from end-user and system converts them to smaller size. After conversion of queries, system interface controller has plugged the information with minimum loaded interface to fetch data from BD server. Fetched records are subdivided into multiple data cubes, and further received at controller side for data analysis. Data analyzer is used to extract all necessary data from data cubes using