CHAPTER 49

TECHNOLOGY
COMPUTER ENGINEERING

Doctoral Theses

01. GUPTA (Rolly)
Data Warehouse Evolution: Design and Maintenance Issues.
Supervisors: Prof. Sangeeta Sabharwal and Prof. Anjana Gosain
Th 25989

Abstract

Data warehouses are huge repositories designed to enable the knowledge workers to make better and faster decisions. Due to its significance in strategic decision making, there is a need to assure data warehouse quality in the presence of evolution events which may be generated as result of change in schema / software or data warehouse requirements. One of the factors affecting the data warehouse quality is view maintenance model quality. Hence, quality of these model has significant impact on the data warehouse quality. Among various quality attributes, cost efficiency has received much attention among researchers focusing on quality of early phase software artefacts. In context of software quality in general, researchers have popularly used design metrics, characterizing structural properties like size, complexity, and coupling etc., to assess and control these quality attributes. In the last few years, several approaches have been proposed to design View Maintenance (VM) model for Data Warehouse (DW) from the logical, conceptual, and physical perspectives. However, none of these approaches deals with the quality perspective for VM model of DW such as defining quality metrics, evaluating internal as well as external quality attributes and building predictive model for quality prediction. Although there are some useful guidelines for designing good view maintenance model, but objective indicators, i.e., metrics are needed to help designers to develop quality view maintenance model. This thesis makes a contribution to the field of data warehouse VM quality by presenting a set of theoretically and empirically evaluated design metrics which can play important role in assessing the efficiency of data warehouse VM model. The theoretical soundness of the proposed metrics have been proven using Poels's distance based framework, Briand's Property based framework and Zuse framework. We have also conducted controlled experiments to empirically validate the metrics. The results of these experiments indicate that these metrics are significantly correlated to the quality attribute. This work analyzed the significance of constraint-based view maintenance updation and optimization approach. We have also proposed a novel approach for feature selection and optimization in materialized views (predicting the quality attribute), focusing on design and maintenance aspects for VM model of DW. Overall results indicate that the proposed metrics satisfy the properties required to characterize metrics as quality measures and these metrics can act as early objective indicators of efficiency of data warehouse VM model.

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02. KNIKA
Improving the Quality of Learning in Dynamic and collaborative Environment.
Supervisors: Prof. Shampa Chakraverty and Prof. Pinaki Chakraborty
Th 25987

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03. NIGAM (Ritu)
Coherent Routing Techniques for Social Opportunistic Network.
Supervisor: Prof. Satbir Jain
Th 25988

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1. Introduction 2. Literature survey 3. Bonding based technique for message forwarding in social opportunistic networks 4. A local betweenness centrality based forwarding technique for social opportunistic networks 5. AI-Enabled trust- based routing protocol for social opportunistic net-works 6. RF-BBFT: A random for social opportunistic networks 7. Energy- efficient BBFT for social opportunistic networks. Conclusion. future work. List of publications and References.

04. YADAV (Anuradha)
Online Trust and Reputation
Supervisors: Prof. Shampa Chakraverty and Dr. Ritu Sibal
Th 25990

Abstract

There are millions of internet users in the world today. Many of them are active on social networking sites, blogosphere, review websites and community websites. The internet forms a globally distributed network which provides a ubiquitous platform for interaction, exchange of information, ideas, and business. The web is pervading our everyday lives in one way or the other that were unimaginable a decade ago. Over the years internet has evolved and so has its role in our lives. Initially static web pages were used and most users only consumed information. Now, web is being used as a platform where a user is generating content in the form of wikis, blogs, social networks, online communities, connecting and sharing information, annotating content with tags, comments and ratings. Next is Intelligent Web i.e. the semantic web, where content will be generated by sensors and machines. Everybody and Everything is

generating information. With Massive growth in online commerce and social networks in the recent past and evolving online world, we are faced with information overload. Anonymity and privacy offered by online world is also creating newer challenges. Internet and online platforms facilitate interactions between users who have never interacted or known to each other before. It is difficult to verify the reliability and quality of information and services available online. Above challenges necessitates strong and effective trust and reputation management systems. Even though online shopping is pervasive now a day and has been in use for almost two decades. But a large majority of people are still uncertain about the trustworthiness of online shopping as per a survey conducted by First Data. In the survey 86% of the respondents had concerns towards trustworthiness of online shopping [97]. They look for a secure web site logo, such as VeriSign or TRUSTe, to determine whether a web site is trustworthy. In the survey, 81% of the consumers indicated that they would seek personal recommendations from family or friends, someone they trust in offline world in order to determine whether an online store was trustworthy. Above observations underscore that trust is the crucial foundation for online business. According to a latest survey report people still have concerns about trusting news and information from social media [95]. Globally across different regions people placed lower trust on news and information from social media as compared to traditional media. A recent study by NBC news and wall street journal revealed that trust in social media and social networks is decreasing [96].

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