International Journal of Engineering and Techniques - Volume 3 Issue 3, May-June 2017

RESEARCH ARTICLE OPEN ACCESS

Evaluation of Role Mining Results Using Data Centric Approach

S.Anthoni Singaraj[1], E.Dilipkumar[2]
[1]PG Student, [2]Associate Professor
[1, 2,] Department of MCA, Dhanalakshmi Srinivasan College of Engineering and Technology

Abstract:

While many role mining algorithms have been proposed in recent years, there lacks a comprehensive study to compare these algorithms. These role mining algorithms have been evaluated when they were proposed, but the evaluations were using different datasets and evaluation criteria. However the two core problems in role mining such as role minimization and edge concentration are Nondeterministic polynomial. Trial and error approach is use to determine the role mining algorithm but it is time consuming due to computational overhead in mining. large data set. In this paper, we introduce a comprehensive framework for evaluating role mining algorithms by adopting a data centric approach that quickly estimates the role mining results without running any role mining algorithm. Our approach illustrated to obtain the result which is accurate effective for role based assignments. We tackle the problem from a fresh angle. Instead of developing fast role mining algorithms, we adopt a data-centric approach that quickly estimates the bounds on optimal role mining results without actually running any role mining algorithm.

1.1 INTRODUCTION TO PROJECT

Data mining is primarily used today by companies with a strong consumer focus - retail, financial, communication, and marketing organizations. It enables these companies to determine relationships among "internal" factors such as price, product positioning, or staff skills, and "external" factors such as economic indicators, competition, and customer demographics. And, it enables them to determine the impact on sales, customer satisfaction, and corporate profits. Finally, it enables them to "drill down" into summary information to view detail transactional data The goal of role engineering is to correctly configure the role-based a control (RBAC),which has been adopted successfully by a variety of information security management systems. Currently, there are two approaches for role engineering the top-down approach and the bottom-up approach. The former configures an RBAC system based on the knowledge in business operation and security policies. The latter uses data mining techniques to discover roles from the user-permission assignments in the existing access control lists (ACL), and as such it also called role mining. In the top-down approach, roles are defined by carefully analyzing and decomposing business processes into smaller units in a functionally independent manner. This process is expensive in general due to the intricacy in business analysis. It has been estimated to consume 60% of the setup cost for an RBAC system. In contrast, the bottom-up approach (role mining) becomes highly desirable, since role mining can automatically identify roles from the access control list in existing applications and systems. In addition, role mining can enforce the existing user-to-permission assignments, leading to a smoother

transition from ACL to RBAC. Due to the above reasons, role mining has attracted more and more attention from both industry and research communities. Role mining is considered to be a multi-objective optimization problem, and various criteria of the quality of role mining results are proposed. Among various criteria, there are two fundamental goals: role minimization and edge concentration. The former is to obtain fewer roles, and the latter is to find fewer assignments. On one hand, fewer roles can greatly reduce the complexity of RBAC and are easier to understand. assignments and make the system management more efficient. Unfortunately, it is usually not easy to simultaneously minimize both.

1.2 SCOPE OF THE PROJECT

The project aims in assigning roles to the user automatically using role mining concept. The goal of role mining is to improve the efficiency of access control by migration ACL to RBAC. Applying this technique to real data sets consistently reduces running time and often improves output quality. Another key problem that has not previously been adequately addressed is how to automatically propose roles that have business meaning. We propose a new methodology to elicit stable candidate roles, by contextually simplifying the role selection task. Finally, we address the problem of effectively managing the risk associated with granting access to resources.

1.3 EXISTING SYSTEM

In the Existing system, roles are assigned automatically based on RBAC The top-down approach in existing systems starts with an analysis of business processes and derives roles from them. This approach is expensive so they used bottom-up method Bottom-up Method (Role Mining) becomes highly desirable, since role mining can automatically identify roles from ACL Existing work on role mining does not generate a complete RBAC system that includes both a role hierarchy and a user-role assignment relation

1.4 PROPOSED SYSTEM

In this paper, we introduce the notion of weighted structural complexity for an RBAC system The major challenges in implementing RBAC is to define a complete and correct set of roles We propose a reference framework to evaluate the results of role mining algorithms We construct a model that reveals the characteristics of datasets directly relevant to role mining results

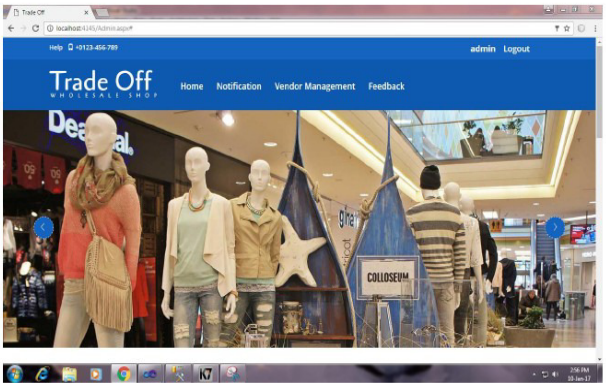
1.5 ADVANTAGES

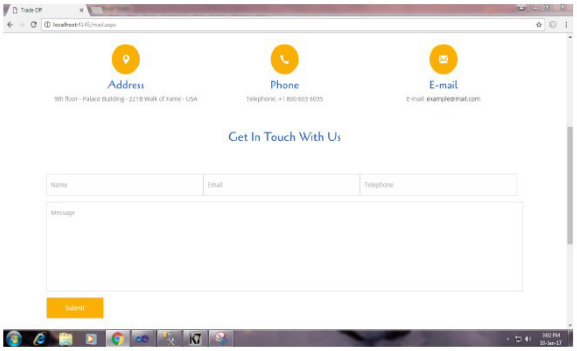
This approach is purely data driven, as all performance metrics are directly associated with the inherent features of the datasets We can quickly set a right goal for role mining before actually running any role mining algorithms Evaluate the quality of a role mining result

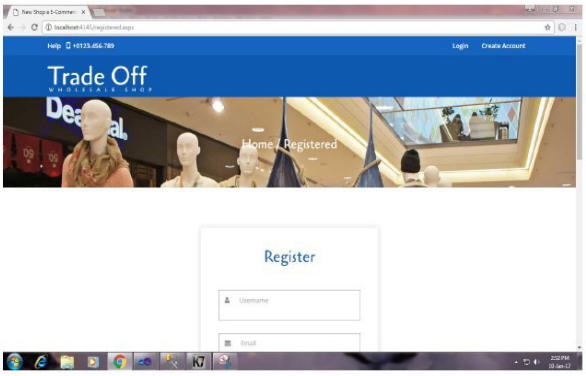
1.5 LIMITATION

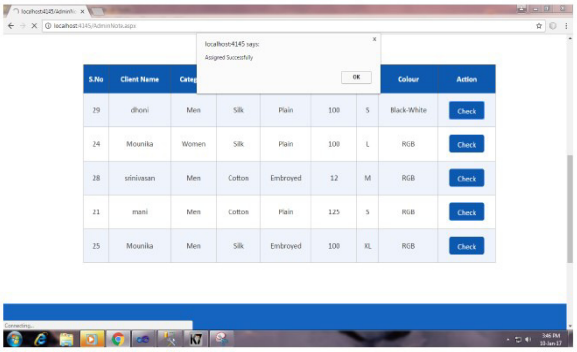
Two core problems raises in role mining, role minimization and edge concentration In role minimization, roles will be minimum so work load will be high In edge concentration, role has no limit so users have less work. Finally, the result will has high efficient It is possible that role mining results become too poor to justify any RBAC algorithm

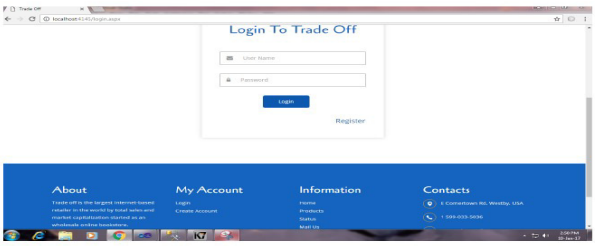
1.6 SCREEN SHOTS

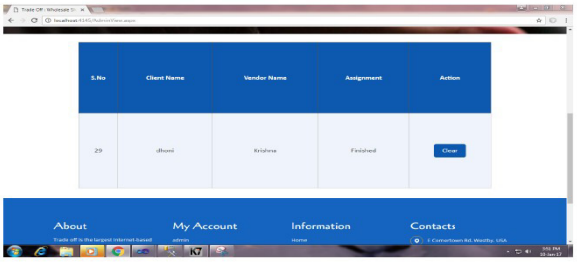


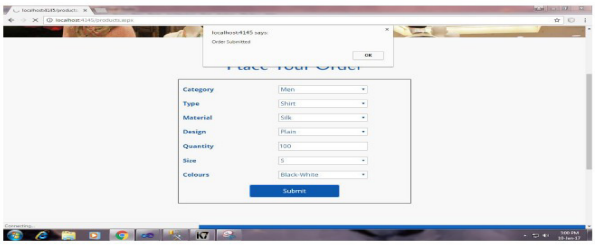


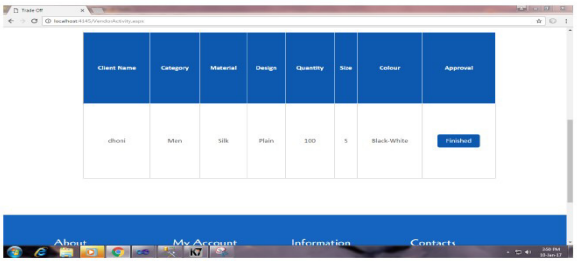












1.7 CONCLUSION & FUTURE WORK

In this project, we developed data-centric quality estimation(DCQE) model and the associated algorithms. With this approach, we can quickly set a right goal for role mining before actually running any role mining algorithms. It concludes that the roles are automatically assigned with respect to the user requirements. Targeting at two goals of role mining, namely role minimization and edge concentration, we proposed corresponding performance metrics for quality of role mining results, compression rate and edge-concentration gain, respectively. The upper bounds of compression rate and edge concentration gain were calculated as the estimated optimums according to the structural features of a bigraph. The coupling rate was proposed to capture the potential of simultaneously approaching the optimum role minimization and the optimum edge concentration.

Our approach is purely data-driven, as all performance metrics are directly associated with the inherent features of the dataset. With this approach, we can quickly set a right goal for role mining before actually running any role mining algorithms. We can also evaluate the quality of a role mining result and determine the room for further improvement. Through extensive experimental tests with real-world datasets, we demonstrated that our approach is accurate and effective in forecasting and evaluating role mining results.

1.8 REFERENCE

[1] A. Colantonio and R. Di Pietro. CONCISE: COmpressed 'N' Comp osable Integer SEt. Information Processing Letters, 110:644–650, 2010.

[2] A. Colantonio, R. Di Pietro, and A. Ocello. An activity-base d model for separation of duty. CoRR, abs/0810.5351, 2008.

[3] A. Colantonio, R. Di Pietro, and A. Ocello. A cost-driven approach to role engineering. In Proceedings of the 23rd ACM Symposium on Applied Computing, SAC '08, volume 3, pages 2129–2136, 2008.

[4] A. Colantonio, R. Di Pietro, and A. Ocello. Leveraging lattices to improve role mining. In Proceedings of the IFIP TC 11 23 Rd International Information Security Conference, SEC '08,pages 333–347, 2008.

[5] A. Colantonio, R. Di Pietro, A. Ocello, and N. V. Verde. A formal framework to elicit roles with business meaning in RBAC systems. In Proceedings of the 14th ACM Symposium on Access Control Models and Technologies, SACMAT '09, pages 85–94, 2009.

[6] A. Colantonio, R. Di Pietro, A. Ocello, and N. V. Verde. Mining stable roles in RBAC. In Proceedings of the IFIP TC 11 24th International Information Security Conference, SEC '09, pages 259–269, 2009.

[7] A. Colantonio, R. Di Pietro, A. Ocello, and N. V. Verde. A probabilistic bound on the basicrole mining problem and its applications. In Proceedings of the IFIP TC 11 24th International Information Security Conference, SEC '09, pages 376–386, 2009.

[8] A. Colantonio, R. Di Pietro, A. Ocello, and N. V. Verde. ABBA: Adaptive bicluster-based approach to impute missing values in binary matrices. In Proceedings of the 25th ACM Symposium on Applied Computing, SAC '10, pages 1027–1034, 2010.

[9] A. Colantonio, R. Di Pietro, A. Ocello, and N. V. Verde. Evaluating the risk of adopting RBAC roles. In Proceedings of the 24th Annual IFIP WG 11.3 Working

Conference on Data and Applications Security, DBSec '10, pages 303–310, 2010.
[10] A. Colantonio, R. Di Pietro, A. Ocello, and N. V. Verde. Mining business-relevant RBAC states through decomposition. In Proceedings of the IFIP TC 11 25th International Information Security Conference, SEC '10, pages 19–30, 2010.
[11] A. Colantonio, R. Di Pietro, A. Ocello, and N. V. Verde. A new role mining framework to elicit business roles and to mitigate enterprise risk. Decision Support Systems, Special Issue on "Enterprise Risk and Security Management: Data, Text and Web Mining", 2010. To appear.
[12] A. Colantonio, R. Di Pietro, A. Ocello, and N. V. Verde. Taming role mining complexity in RBAC. Computers & Security, 29:548–564, 2010. Special Issue on "Challenges for Security, Privacy & Trust".
[13] A. Colantonio, R. Di Pietro, A. Ocello, and N. V. Verde. Visual role mining: A picture is worth a thousand roles. IEEE Transactions on Knowledge and Data Engineering (TKDE), 2011. To appear.
[14] A. Colantonio, R. Di Pietro, and N. V. Verde. A novel approachto impute missing values and detecting outliers in binary matrices. Data Mining and Knowledge Discovery (DMKD), 2011. Submitted for revision.
[15] A. Colantonio, R. Di Pietro, and N. V. Verde. Privacy preserving role-engineering. 2011. Submitted for revision
.