6 Summary and conclusions

Discovering the complex periodic patterns in the system logs is a difficult and time consuming task. This work defines a concept of *periodic pattern* and shows how to find the periodic patterns in the the system logs. An approach described here shows that it is easier to find the simple periodic patterns and later on to compose them into the complex ones instead of directly searching for all complex patterns. The discovered periodic patterns can be used to model future workload after the old applications are replaced with the new ones or the new applications are added to a system. It is also easier to reconcile the new audit trails with the collections of periodic patterns discovered from the previous system logs than to integrate the complete logs.

References

1. Osterhage, W.: Computer Performance Optimization. Springer-Verlag (2013)
2. Bruno, N., ed.: Automated Physical Database Design and Tuning. CRC Press Taylor and Francis Group (2011)
3. Agrawal, R., Imielinski, T., Swami, A.: Mining association rules between sets of items in large databases. In: Proceedings of The 1993 ACM SIGMOD Intl. Conf. on Management of Data. (1993) 207–216
4. Mannila, H., Toivonen, H., Verkamo, A.I.: Discovery of frequent episodes in event sequences. Data Mining and Knowledge Discovery **1** (1997) 259–289
5. Rasheeed, F., Alshalalfa, M., Alhajj, R.: Efficient periodicity mining in time series databases using suffix trees. IEEE Transactions on Knowledge and Data Engineering **23**(1) (2011) 79–94
6. Huang, K.Y., Chang, C.H.: SMCA: A general model for mining asynchronous periodic patterns in temporal databases. IEEE Transactions on Knowledge and Data Engineering **17**(6) (2005) 774–785
7. Yang, J., Wang, W., Yu, P.S.: Mining asynchronous periodic patterns in time series data. IEEE Trans. on Knowl. and Data Eng. **15**(3) (March 2003) 613–628
8. Özden, B., Ramaswamy, S., Silberschatz, A.: Cyclic association rules. In: Proceedings of the Fourteenth International Conference on Data Engineering. (1998) 412–421
9. Baudinet, M., Chomicki, J., Wolper, P.: Temporal deductive databases (1992)
10. Laxman, S., Sastry, P.S.: A survey of temporal data mining. Sadhana, Academy Proceedings in Engineering Sciences **31**(2) (2006) 173–198
11. Roddick, J.F., Society, I.C., Spiliopoulou, M., Society, I.C.: A survey of temporal knowledge discovery paradigms and methods. IEEE Transactions on Knowledge and Data Engineering **14** (2002) 750–767
12. Zimniak, M., Getta, J., Benn, W.: Deriving composite periodic patterns from database audit trails. In: The 6th Asian Conference on Intelligent Information and Database Systems. (2014) 310–321