

Chapter 12

Summary

In the third part of the book, we examined two popular border-based approaches that have been recently proposed for the hiding of sensitive frequent itemsets. The first approach, called BBA, was presented in Chapter 10 and was developed by Sun & Yu in [66, 67]. This approach uses the border of the nonsensitive frequent itemsets to track the impact of altering items of transactions in the original database. The second approach, called Max–Min, was proposed by Moustakides & Verykios in [50] and was covered in Chapter 11. It involves two heuristic algorithms that rely on the max–min criterion and use the revised positive border to hide the sensitive knowledge with minimal impact on the nonsensitive frequent itemsets. By restricting the impact of any tentative item modifications to the itemsets of the revised positive border, both BBA and Max–Min achieve to identify hiding solutions with fewer side-effects, when compared to pure heuristic approaches. This is due to the fact that tracking the impact of item modifications to the itemsets of the borders provides a measure of the side-effects that are induced by the hiding algorithm to the original database (in terms of lost itemsets) and thus serves as an optimization criterion to guide the hiding process towards high quality solutions. As a concluding remark, we should point out that although border-based approaches provide an improvement over pure heuristic approaches, they are still reliant on heuristics to decide upon the item modifications that they apply on the original database. As a result, in many cases these methodologies are unable to identify optimal hiding solutions, although such solutions may exist for the problem at hand.