

Ref: Basic Concepts of Frequent Pattern Mining



- ◉ **(Association Rules)** R. Agrawal, T. Imielinski, and A. Swami. Mining association rules between sets of items in large databases. SIGMOD'93.
- ◉ **(Max-pattern)** R. J. Bayardo. Efficiently mining long patterns from databases. SIGMOD'98.
- ◉ **(Closed-pattern)** N. Pasquier, Y. Bastide, R. Taouil, and L. Lakhal. Discovering frequent closed itemsets for association rules. ICDT'99.
- ◉ **(Sequential pattern)** R. Agrawal and R. Srikant. Mining sequential patterns. ICDE'95

1



Ref: Apriori and Its Improvements



- ◉ R. Agrawal and R. Srikant. Fast algorithms for mining association rules. VLDB'94.
- ◉ H. Mannila, H. Toivonen, and A. I. Verkamo. Efficient algorithms for discovering association rules. KDD'94.
- ◉ A. Savasere, E. Omiecinski, and S. Navathe. An efficient algorithm for mining association rules in large databases. VLDB'95.
- ◉ J. S. Park, M. S. Chen, and P. S. Yu. An effective hash-based algorithm for mining association rules. SIGMOD'95.
- ◉ H. Toivonen. Sampling large databases for association rules. VLDB'96.
- ◉ S. Brin, R. Motwani, J. D. Ullman, and S. Tsur. Dynamic itemset counting and implication rules for market basket analysis. SIGMOD'97.
- ◉ S. Sarawagi, S. Thomas, and R. Agrawal. Integrating association rule mining with relational database systems: Alternatives and implications. SIGMOD'98.

2



Ref: Depth-First, Projection-Based FP Mining



- ◉ R. Agarwal, C. Aggarwal, and V. V. V. Prasad. A tree projection algorithm for generation of frequent itemsets. *J. Parallel and Distributed Computing*:02.
- ◉ J. Han, J. Pei, and Y. Yin. Mining frequent patterns without candidate generation. *SIGMOD'00*.
- ◉ J. Pei, J. Han, and R. Mao. CLOSET: An Efficient Algorithm for Mining Frequent Closed Itemsets. *DMKD'00*.
- ◉ J. Liu, Y. Pan, K. Wang, and J. Han. Mining Frequent Item Sets by Opportunistic Projection. *KDD'02*.
- ◉ J. Han, J. Wang, Y. Lu, and P. Tzvetkov. Mining Top-K Frequent Closed Patterns without Minimum Support. *ICDM'02*.
- ◉ J. Wang, J. Han, and J. Pei. CLOSET+: Searching for the Best Strategies for Mining Frequent Closed Itemsets. *KDD'03*.
- ◉ G. Liu, H. Lu, W. Lou, J. X. Yu. On Computing, Storing and Querying Frequent Patterns. *KDD'03*.

3



Ref: Vertical Format and Row Enumeration Methods



- ◉ M. J. Zaki, S. Parthasarathy, M. Ogihara, and W. Li. Parallel algorithm for discovery of association rules. *DAMI*:97.
- ◉ Zaki and Hsiao. CHARM: An Efficient Algorithm for Closed Itemset Mining, *SDM'02*.
- ◉ C. Bucila, J. Gehrke, D. Kifer, and W. White. DualMiner: A Dual-Pruning Algorithm for Itemsets with Constraints. *KDD'02*.
- ◉ F. Pan, G. Cong, A. K. H. Tung, J. Yang, and M. Zaki, CARPENTER: Finding Closed Patterns in Long Biological Datasets. *KDD'03*.

4



Ref: Mining Multi-Level and Quantitative Rules



- ◉ R. Srikant and R. Agrawal. Mining generalized association rules. VLDB'95.
- ◉ J. Han and Y. Fu. Discovery of multiple-level association rules from large databases. VLDB'95.
- ◉ R. Srikant and R. Agrawal. Mining quantitative association rules in large relational tables. SIGMOD'96.
- ◉ T. Fukuda, Y. Morimoto, S. Morishita, and T. Tokuyama. Data mining using two-dimensional optimized association rules: Scheme, algorithms, and visualization. SIGMOD'96.
- ◉ K. Yoda, T. Fukuda, Y. Morimoto, S. Morishita, and T. Tokuyama. Computing optimized rectilinear regions for association rules. KDD'97.
- ◉ R.J. Miller and Y. Yang. Association rules over interval data. SIGMOD'97.
- ◉ Y. Aumann and Y. Lindell. A Statistical Theory for Quantitative Association Rules KDD'99.

5



Ref: Mining Correlations and Interesting Rules



- ◉ M. Klemettinen, H. Mannila, P. Ronkainen, H. Toivonen, and A. I. Verkamo. Finding interesting rules from large sets of discovered association rules. CIKM'94.
- ◉ S. Brin, R. Motwani, and C. Silverstein. Beyond market basket: Generalizing association rules to correlations. SIGMOD'97.
- ◉ C. Silverstein, S. Brin, R. Motwani, and J. Ullman. Scalable techniques for mining causal structures. VLDB'98.
- ◉ P.-N. Tan, V. Kumar, and J. Srivastava. Selecting the Right Interestingness Measure for Association Patterns. KDD'02.
- ◉ E. Omiecinski. Alternative Interest Measures for Mining Associations. TKDE' 03.
- ◉ Y. K. Lee, W.Y. Kim, Y. D. Cai, and J. Han. CoMine: Efficient Mining of Correlated Patterns. ICDM' 03.

6



Ref: Mining Other Kinds of Rules



- ◉ R. Meo, G. Psaila, and S. Ceri. A new SQL-like operator for mining association rules. VLDB'96.
- ◉ B. Lent, A. Swami, and J. Widom. Clustering association rules. ICDE'97.
- ◉ A. Savasere, E. Omiecinski, and S. Navathe. Mining for strong negative associations in a large database of customer transactions. ICDE'98.
- ◉ D. Tsur, J. D. Ullman, S. Abitboul, C. Clifton, R. Motwani, and S. Nestorov. Query flocks: A generalization of association-rule mining. SIGMOD'98.
- ◉ F. Korn, A. Labrinidis, Y. Kotidis, and C. Faloutsos. Ratio rules: A new paradigm for fast, quantifiable data mining. VLDB'98.
- ◉ K. Wang, S. Zhou, J. Han. Profit Mining: From Patterns to Actions. EDBT' 02.

7



Ref: Constraint-Based Pattern Mining



- ◉ R. Srikant, Q. Vu, and R. Agrawal. Mining association rules with item constraints. KDD'97.
- ◉ R. Ng, L.V.S. Lakshmanan, J. Han & A. Pang. Exploratory mining and pruning optimizations of constrained association rules. SIGMOD' 98.
- ◉ M.N. Garofalakis, R. Rastogi, K. Shim: SPIRIT: Sequential Pattern Mining with Regular Expression Constraints. VLDB' 99.
- ◉ G. Grahne, L. Lakshmanan, and X. Wang. Efficient mining of constrained correlated sets. ICDE'00.
- ◉ J. Pei, J. Han, and L. V. S. Lakshmanan. Mining Frequent Itemsets with Convertible Constraints. ICDE'01.
- ◉ J. Pei, J. Han, and W. Wang, Mining Sequential Patterns with Constraints in Large Databases, CIKM'02.

8



Ref: Mining Sequential and Structured Patterns



- ◉ R. Srikant and R. Agrawal. Mining sequential patterns: Generalizations and performance improvements. EDBT' 96.
- ◉ H. Mannila, H Toivonen, and A. I. Verkamo. Discovery of frequent episodes in event sequences. DAMI:97.
- ◉ M. Zaki. SPADE: An Efficient Algorithm for Mining Frequent Sequences. Machine Learning:01.
- ◉ J. Pei, J. Han, H. Pinto, Q. Chen, U. Dayal, and M.-C. Hsu. PrefixSpan: Mining Sequential Patterns Efficiently by Prefix-Projected Pattern Growth. ICDE'01.
- ◉ M. Kuramochi and G. Karypis. Frequent Subgraph Discovery. ICDM'01.
- ◉ X. Yan, J. Han, and R. Afshar. CloSpan: Mining Closed Sequential Patterns in Large Datasets. SDM'03.
- ◉ X. Yan and J. Han. CloseGraph: Mining Closed Frequent Graph Patterns. KDD'03.

9



Ref: Mining Spatial, Multimedia, and Web Data



- ◉ K. Koperski and J. Han, Discovery of Spatial Association Rules in Geographic Information Databases, SSD' 95.
- ◉ O. R. Zaiane, M. Xin, J. Han, Discovering Web Access Patterns and Trends by Applying OLAP and Data Mining Technology on Web Logs. ADL'98.
- ◉ O. R. Zaiane, J. Han, and H. Zhu, Mining Recurrent Items in Multimedia with Progressive Resolution Refinement. ICDE'00.
- ◉ D. Gunopulos and I. Tsoukatos. Efficient Mining of Spatiotemporal Patterns. SSTD'01.

10



Ref: Mining Frequent Patterns in Time-Series Data



- ◉ B. Ozden, S. Ramaswamy, and A. Silberschatz. Cyclic association rules. ICDE'98.
- ◉ J. Han, G. Dong and Y. Yin, Efficient Mining of Partial Periodic Patterns in Time Series Database, ICDE'99.
- ◉ H. Lu, L. Feng, and J. Han. Beyond Intra-Transaction Association Analysis: Mining Multi-Dimensional Inter-Transaction Association Rules. TOIS:00.
- ◉ B.-K. Yi, N. Sidiropoulos, T. Johnson, H. V. Jagadish, C. Faloutsos, and A. Biliris. Online Data Mining for Co-Evolving Time Sequences. ICDE'00.
- ◉ W. Wang, J. Yang, R. Muntz. TAR: Temporal Association Rules on Evolving Numerical Attributes. ICDE' 01.
- ◉ J. Yang, W. Wang, P. S. Yu. Mining Asynchronous Periodic Patterns in Time Series Data. TKDE' 03.

11



Ref: Iceberg Cube and Cube Computation



- ◉ S. Agarwal, R. Agrawal, P. M. Deshpande, A. Gupta, J. F. Naughton, R. Ramakrishnan, and S. Sarawagi. On the computation of multidimensional aggregates. VLDB'96.
- ◉ Y. Zhao, P. M. Deshpande, and J. F. Naughton. An array-based algorithm for simultaneous multidimensional aggregates. SIGMOD'97.
- ◉ J. Gray, et al. Data cube: A relational aggregation operator generalizing group-by, cross-tab and sub-totals. DAMI: 97.
- ◉ M. Fang, N. Shivakumar, H. Garcia-Molina, R. Motwani, and J. D. Ullman. Computing iceberg queries efficiently. VLDB'98.
- ◉ S. Sarawagi, R. Agrawal, and N. Megiddo. Discovery-driven exploration of OLAP data cubes. EDBT'98.
- ◉ K. Beyer and R. Ramakrishnan. Bottom-up computation of sparse and iceberg cubes. SIGMOD'99.

12



Ref: Iceberg Cube and Cube Exploration



- ◉ J. Han, J. Pei, G. Dong, and K. Wang, Computing Iceberg Data Cubes with Complex Measures. SIGMOD' 01.
- ◉ W. Wang, H. Lu, J. Feng, and J. X. Yu. Condensed Cube: An Effective Approach to Reducing Data Cube Size. ICDE'02.
- ◉ G. Dong, J. Han, J. Lam, J. Pei, and K. Wang. Mining Multi-Dimensional Constrained Gradients in Data Cubes. VLDB'01.
- ◉ T. Imielinski, L. Khachiyan, and A. Abdulghani. Cubegrades: Generalizing association rules. DAMI:02.
- ◉ L. V. S. Lakshmanan, J. Pei, and J. Han. Quotient Cube: How to Summarize the Semantics of a Data Cube. VLDB'02.
- ◉ D. Xin, J. Han, X. Li, B. W. Wah. Star-Cubing: Computing Iceberg Cubes by Top-Down and Bottom-Up Integration. VLDB'03.

13



Ref: FP for Classification and Clustering



- ◉ G. Dong and J. Li. Efficient mining of emerging patterns: Discovering trends and differences. KDD'99.
- ◉ B. Liu, W. Hsu, Y. Ma. Integrating Classification and Association Rule Mining. KDD' 98.
- ◉ W. Li, J. Han, and J. Pei. CMAR: Accurate and Efficient Classification Based on Multiple Class-Association Rules. ICDM'01.
- ◉ H. Wang, W. Wang, J. Yang, and P.S. Yu. Clustering by pattern similarity in large data sets. SIGMOD' 02.
- ◉ J. Yang and W. Wang. CLUSEQ: efficient and effective sequence clustering. ICDE' 03.
- ◉ B. Fung, K. Wang, and M. Ester. Large Hierarchical Document Clustering Using Frequent Itemset. SDM' 03.
- ◉ X. Yin and J. Han. CPAR: Classification based on Predictive Association Rules. SDM'03.

14



Ref: Stream and Privacy-Preserving FP Mining



- ◉ A. Evfimievski, R. Srikant, R. Agrawal, J. Gehrke. Privacy Preserving Mining of Association Rules. KDD' 02.
- ◉ J. Vaidya and C. Clifton. Privacy Preserving Association Rule Mining in Vertically Partitioned Data. KDD' 02.
- ◉ G. Manku and R. Motwani. Approximate Frequency Counts over Data Streams. VLDB' 02.
- ◉ Y. Chen, G. Dong, J. Han, B. W. Wah, and J. Wang. Multi-Dimensional Regression Analysis of Time-Series Data Streams. VLDB'02.
- ◉ C. Giannella, J. Han, J. Pei, X. Yan and P. S. Yu. Mining Frequent Patterns in Data Streams at Multiple Time Granularities, Next Generation Data Mining:03.
- ◉ A. Evfimievski, J. Gehrke, and R. Srikant. Limiting Privacy Breaches in Privacy Preserving Data Mining. PODS' 03.

15



Ref: Other Freq. Pattern Mining Applications



- ◉ Y. Huhtala, J. Kärkkäinen, P. Porkka, H. Toivonen. Efficient Discovery of Functional and Approximate Dependencies Using Partitions. ICDE' 98.
- ◉ H. V. Jagadish, J. Madar, and R. Ng. Semantic Compression and Pattern Extraction with Fascicles. VLDB'99.
- ◉ T. Dasu, T. Johnson, S. Muthukrishnan, and V. Shkapenyuk. Mining Database Structure; or How to Build a Data Quality Browser. SIGMOD'02.

16





Thanks !

