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IMPROVING FINANCIAL AUDITING

Forensic accountants in law enforcement who investigate or work directly for the financial industry use data mining tools to uncover patterns that indicate errors or fraud in the vast amount of financial data. As in other data mining applications, the quality of analysis is a key differentiator of these technologies. Software developers are continuously devising auditing tools to provide increasingly sophisticated error and fraud detection to forensic accountants. For example, WizSoft® Inc., of Syosset, New York, a wholly-owned subsidiary of WizSoft Ltd., of Tel Aviv, Israel, has designed its patent-pending Revealing Outstand If-Then Rules feature to enhance the analytical capabilities of its WizRule data auditing tool. WizSoft develops, licenses, and supports software products based on mathematical algorithms for the business sector. Their portfolio includes: data mining tools, data auditing, concept-based search engine, knowledge management, and Enterprise Resource Planning.

WizRule is a data auditing tool based on data-mining technology. It automatically reveals the main patterns or rules that hold in the data, and points at the cases deviating from these rules as suspected errors or frauds. Previous versions of WizRule revealed records that deviate from a rule. This method does not detect cases where a fraud is done repeatedly because such a fraud creates a rule, explained Abraham Meidan, founder and CEO of WizSoft. The outstanding if-then rules meet this shortage. When a fraud is done repeatedly it creates a rule that deviates from other rules, and as such it is classified by WizRule as an outstanding rule. For example, suppose the data set lists sales transactions. All the customers get a 10% discount, except for one customer that gets a 20% discount. WizRule will reveal it as an outstanding rule.

Meidan described the two primary challenges in developing his company's patent-pending feature. First, determining the patterns of rules that denote suspected phenomena, and second, how to complete the calculations and issue the report quickly. "We surveyed many cases and concluded that the main patterns of unexpected rules are: (i) Cases where a rule is found only in regard to one value, for example, the data include 100 customers, and there are various discounts in the sale transactions of each customer, except for one customer where the discount in all the transactions is the 15%. (ii) Cases where there is one rule for all the values except for one value having another rule. For example, the discount in all the sale transactions for all the customers is 10%, except for one customer, whose discount is 20% (in all

the sale transactions). We then developed a mathematical algorithm that completes the calculations very fast. "

During its basic operation WizRule reveals all the if-then rules (and points at the records deviating from these rules. In the next stage, when searching for outstanding rules with the Revealing Outstand If-Then Rules feature , WizRule reviews the if-then rules and looks for the following two cases: (1) Cases where there is a rule that relates to one value, and this rule is different from another rule that hold for all the other values. For example, the rule for all the customers is: "If the customer is X, then the discount is 10%" except for one customer, C1, that gets a 20% discount. The rule "If the customer is C1, then the discount is 20%" is classified as an outstanding rule. (2) Cases where only one rule holds although several rules were expected. For example, if there are many customers, each having many sales transactions, and the only rule that holds is "if customer is C2, then the discount is 15%" (i.e. there are no similar rules that relate between other customers and the discount vale), then this rule is classified as an outstanding rule.

Specifically, the new WizRule feature can reveal cases where the errors or the fraudulent activities are recorded by many records rather than an outlier. The outstanding rule may be a result of a fraud. For example, a sales person contacts a customer and gives him a discount in all the sales. Or the outstanding rule may be a result of a software bug.

The WizSoft CEO has observed that currently available data-mining tools used in auditing analyse structured data. "We believe that new tools will analyse non-structured data, mainly text data, as well," opined Meidan. He advised that software suppliers develop text-mining algorithms that can be used for revealing unexpected phenomena.

The executive commented that not many investigation agencies or financial institutions use data-mining for auditing. "Many of them use just standard tools, such as ACL [Audit Command Language] or IDEA [Interactive Data Extraction and Analysis]. We recommend that on top of using these standard tools, the agencies and institutions will use data-mining tools because the data mining tools reveal errors and frauds that cannot be revealed by the standard tool," stressed Meidan. When using the standard tools the investigator has to decide in advance what types of errors of frauds he is looking for, while the data mining tool reveals errors and frauds without any previous assumptions. In addition, the data mining tools can also be used when issuing a due diligence, since the data mining analysis issues a "reverse engineering" of the processes that created the contents of the data.

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