Brighterion™

Keeping an eye on your business™

The Ten Technologies

True intelligence may be forever out of reach of even the most advanced tools we can build. However, iPrevent's artificial intelligence technologies are genuinely self-adaptive and can identify previously unknown and undefined relationships.

Goal-based Multi-Agent Technology

Description

Distinct from algorithmic systems in which the programmer defines how the system will solve problems, in a goal-based system. it is the system itself that determines how to find the solution. Goal-based systems consist of independent agents that interact and negotiate with each other in order to reach their individual and collective goals. Each agent is provided goal information which describes situations that are desirable or undesirable. Problems are solved without extensive programming or defining a set of specific rules.

iPrevent

Brighterion's iPrevent contains the first multi-agent technology that can provide a solution in "unsupervised" mode, when the user does not know what to look for, or even what questions to ask. Every transaction is accepted by either the bad (fraud) or the good (normal) agents, and the agents interact to determine in which category the new transaction belongs.

Independent Review

"(Brighterion's suite) solves problems that can't be solved easily with traditional programming techniques. These problems are in the area of AI techniques and the goal-orientation of agent "programming" (tell the agents "what", not "how"). (Brighterion's multi-agent technology) has been well applied to such problems as diagnosis, distributed systems management, real-time military logistics, and manufacturing supply chains. Contains large set of decision technologies. This includes constraint-based, neural, case-based, fuzzy, and traditional rules all within one consistent framework for modules to call each other in intricate ways. In particular, the adaptive metacontrol engine that can dynamically and automatically select/reselect any of these technologies to suit a particular problem is the crowning "gem" of the set and of the entire (Brighterion) design. Provides a complete development environment. The ability to attach agents to software procedures in over a dozen languages, the choice of either graphical composition or declarative scripts, and the export generation of complete agents as Java or C++ modules shows a very mature tool focus." *source: IBM Network Security Products/Intelligence Agents, Research Triangle Park, NC.Don Gilbert, manager; Manny Aparicio, PhD..*

Neural Network

Description

Neural networks are algorithmic systems which interpret historical data to identify trends and patterns against which to compare subject cases. When a case is presented, its factors are fed into the input layer of the neural net. The factors' weights are adjusted as the numbers feed through the neural net and reach the output nodes as a single source accompanied by a certainty factor. Typical neural networks are limited by their training: i.e. they can reliably recognize only the kind of information on which they were trained. New information will be patiently processed, but the result provided can be nonsense
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iPrevent

iPrevent's proprietary neural network can translate any database to neurons without user intervention and has significantly accelerated the speed of convergence as compared to typical neural network algorithms such as backpropagation. Brighterion's neural net is incremental and adaptive, allowing the size of the output classes to change dynamically. Additionally, in its expert mode, iPrevent provides a library of twelve different neural network models for use in customization.

Case-Based Reasoning

Description

Case-based reasoning is the use of past experiences or cases to solve new problems. A case is translated to a list of features that leads to a certain outcome. Cases are stored and organized in the database and when a similar situation arises the system can go right to the solution. Therefore, the solutions to complex problems are found very quickly and accurately.

iPrevent

iPrevent uses a genetic case-based reasoning model that can translate a database to cases without user intervention. The cases created are used to match subject transactions for normal/fraud determination.

Fuzzy Logic

Description

Fuzzy logic is able to account for areas that are not clearly defined. The logic can be extended to handle partial truths in situations where the answer lies somewhere in between what is true and what is false.

iPrevent

iPrevent's fuzzy logic can be used to automatically create generic attributes and enable business experts to write fuzzy rules or fuzzy constraints if needed.

Genetic Algorithms

Description

Genetic algorithms address complicated problems with many variables and a large number of possible outcomes, by simulating the evolutionary process of "survival of the fittest" to reach a defined goal. They operate by generating many random answers to a problem, eliminating the worst and cross-pollinating the better answers. Repeating this elimination and regeneration process gradually improves the quality of the answers to an optimal or near optimal condition. The more complex the constraints, the more successful the genetic algorithm is likely to be.

iPrevent

iPrevent's genetic algorithm has specific fraud evaluation functions effective in finance, healthcare, insurance, money laundering, e-commerce and telecommunications.

Business Rules

Description

Business rules, or expert systems, apply the knowledge of human experts in the subject field to define conclusions according to the conditions presented. The classic "if...then..." format is repeated explicitly for each known situation and its necessary solution. RETE is the industry standard algorithm for providing efficient access to the millions of rules typically generated by or for an effective expert system,

iPrevent

iPrevent is embedded with a patented rule engine algorithm which is nearly nine times faster than RETE and can accept millions of rules. iPrevent also provides the following tools for use in customization if needed;

Rule Builder -Integrated development environment for developing debugging rule applications.

Business Rule Language - Customizable and extensible, placing business rule power in the hands of the business users.

Rule Editor - Powerful, web-enabled components that can be embedded in applications.

Optimization Suite

Description

Specific constraints can be added to the system that will define what is allowed, or what is not allowed in a particular outcome. As a result, the authorization can be accepted or denied.

iPrevent

iPrevent's optimization suite provides the following tools to allow non-technical experts to write declarative constraints

Constraint Builder - Integrated development environment for developing and debugging constraint-based applications

Constraint Language - Customizable and extendable, placing constraint power in the hands of the business users.

Constraint Editor - Powerful, web-enabled components that can be embedded in applications

Statistics

Description

Statistical theory gives asymiotic results that can be used to describe likelihood in large samples. While it is often impossible to calculate scores for all models when searching a large model space, it is often feasible to describe and calculate scores for a few equivalence classes of models receiving the highest scores. Prediction methods for this sort of problem always assume some regularities - constraints - in the probability distribution.

iPrevent

iPrevent uses a number of statistical methods including correlation, regression, Chi-square and others

Data Mining

Description

Data mining or knowledge discovery in databases (KDD) is the non-trivial extraction of implicit, previously unknown and potentially useful information from data. It is the search for relationships and global patterns that exist is large databases but are hidden among the vast amount of data. Using particular classifications, association rules, and analyzing sequences, data is extracted, analyzed and presented graphically.

iPrevent

iPrevent's suite of data mining algorithms provides a number of different technical approaches to address data cleaning, clustering, data summarization, learning classification rules, analyzing changes and detecting anomalies. iPrevent's data mining can automatically generate business rules from the customer's data. The iPrevent Data Mining Suite which was selected as the best by the META Group's "Benchmark Study", automatically selects the specific algorithm most appropriate for the format of the subject data.

Independent Review

"Next generation...agents will use knowledge gained from historical, post-processing of data, and active learning in real-time to provide proactive response to customer demand. IBM and Brighterion, formally IMMUNE, are current leaders in this area." *source: META Group Benchmark Study, "Data Mining Market Trends, 1998"*

Text Mining

Description

Beyond simple screening for vocabulary, text mining is the interpretation of the meaning of textual content. Effective text mining is essential for the detection of money laundering and the behavior which indicates the manipulation of financial markets.

iPrevent

iPrevent's Text Mining technology uses a proprietary algorithm that can decode electronic messaging formats, such as news groups, investment chat rooms or electronic funds transfer documents, and interpret the text messages to determine if they indicate criminal intent.