Expert systems tool kit available for UNIX PCs

A software tool kit for building and operating industrial-scale expert systems on the IBM PC-AT and PC-XT is now available from Radian Corporation.

Called RuleMaster, the new software package permits the creation of expert systems for advisory, diagnosis, prediction, or control applications. RuleMaster does not require Lisp or Prolog language skills or machines.

RuleMaster applications cover engineering, technical, and industrial areas, including fault diagnosis, on-line operations advice, interactive maintenance manuals, weather prediction, and chemical analysis advice, the company claims.

According to Radian, RuleMaster offers an approach to expert systems development which differs radically from that of systems based on conventional AI languages such as Lisp. Unlike Lisp, RuleMaster provides a facility for inducing rules from examples; and Radial, a high-level language for expressing rules. Radial is similar to structured algorithmic programming languages such as Ada and Pascal, the company claims.

The RuleMaker facility speeds application development by automatically generating rules and Radial code from a set of declarative examples supplied by an expert. The knowledge engineer gather examples from the expert and enters them into an "example table" in any order. RuleMaker induces procedural rules from the examples, and generates modules that express those rules in the Radial language. Conflicts in the resulting logic that stem from improperly constructed example tables are discovered and reported by RuleMaster to the user for correction. Additionally, omission of required logical entries in an example table are reported to the user for modification.

Knowledge engineers working with RuleMaster can write code directly in the Radial language. Manually written Radial code can be inserted into code generated by RuleMaker from an example table. RuleMaster can also access external routines written in various languages such as Fortran and Pascal.

The Radial language implements two fundamental reasoning mechanisms: backward and forward chaining. Most practical applications require a combination of backward and forward chaining for different parts of the solution. With RuleMaster, a knowledge engineer can combine both chaining methods in a single expert system.

Backward chaining is commonly employed for diagnostic applications. This reasoning mechanism is useful for selecting the best solution to a problem from a number of possibilities, such as the most probable cause of equipment failure from many possible causes.

Forward chaining is a reasoning mechanism useful in planning and monitoring expert systems. Applications include process control, robotic control, and simulation.

RuleMaster is available for use on the IBM PC-AT and PC-XT running under the Xenix or DOS 3.0 operating system. The price for the PC-AT version is $15,000; for the PC-XT version, $5000. Quantity discounts are available. The purchase price covers a four-day training session held at Radian each month.

Written in C, RuleMaster can potentially be run on any computer with a C compiler. The UNIX version of RuleMaster currently runs on DEC VAX systems, and has been implemented on several other UNIX-based systems from Gould, Perkin-Elmer, and Sun Microsystems. The UNIX version of RuleMaster is priced at $25,000.

Radian Corporation is located at 8501 Mo-Pac Blvd., PO Box 9948, Austin, TX 78766; (512) 454-4797.

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