

Listed are abstracts from recent papers by IBM authors. Inquiries should be directed to the publications cited.

Simulating intelligence, Arthur Appel (RES Yorktown Hts., NY), *Machine Design* 49, No. 28, 148-155 (1977). Advances have been made in the simulation of artificial intelligence using computers. Activities such as voice and pattern recognition have been simulated with such strategies as networks, artificial evolution, and heuristic programming. This paper discusses these strategies as well as program representation schemes and examples of uses of computerized artificial intelligence in real-world environments.

Behavioral issues in the use of interactive systems, Lance A. Miller and John C. Thomas, Jr., (RES Yorktown Hts., NY), *International Journal of Man-Machine Studies* 9, No. 5, 509-536 (1977). This paper reviews the behavioral issues involved in a user's reaction to interactive systems. The information applies to users in general rather than to a particular application set. The aspects of performance and system capabilities are discussed from a user's viewpoint. Also, the various kinds of interfaces to a system such as voice, keyboard, and display, and the situations that arise from their use, are explored. An extensive bibliography is included.

Control of the IBM 3800 Printing Subsystem, G. I. Findley, D. P. Leabo, and A. C. Slutman (GPD San Jose, CA), *IBM Journal of Research and Development* 22, No. 1, 2-12 (1978). The IBM 3800 Printing Subsystem is controlled by a high-speed, multilevel, interrupt-driven microprocessor. The design of this system has included several innovative concepts that take advantage of the flexibility of electrophotographic laser printing. New functions that are introduced include intermixed pitches, fonts, and line spacings; user-alterable character sets; on-line forms generation; and superior retry, fail-soft and diagnostic capabilities. This paper discusses many of the objectives, development tradeoffs, and resultant control implementations for an on-line computer output printing subsystem.

Automated Validation of a Communications Protocol: The CCITT X.21 Recommendation, C. H. West and P. Zafropulo (RES Zurich, Switzerland), *IBM Journal of Research and Development* 22, No. 1, 60-71 (1978). The call establishment procedure of the X.21 interface recommended by the International Telegraph and Telephone Consultative Committee (CCITT) has been validated as a test of a recently developed theory and of an implemented system for automated communications protocol validation. The test demonstrated the applicability of the validation technique and identified a number of points where the interface state diagram does not completely define the interface behavior.

Abstracts