NEW APPLICATIONS computer systems at work

Nervous System Computer Model Under Development

A computer model of a nervous system is being developed at Carnegie-Mellon University.

The project is funded by a $1,762,000 grant from the National Science Foundation.

Through construction of such a computer simulation, scientists hope to find out more about the correlation between the nerve cell structure and function.

Principal investigator for the project at CMU is Dr. D.R. Reddy, associate professor of computer science. Working with Dr. Reddy is Dr. W.J. Davis, professor of biology at the University of California at Santa Cruz.

In the study, Professor Reddy will construct a geometrical representation of a lobster ganglion (a set of nerve cells), specifically the ganglion system which operates the lobster’s swimming, the appendages used for swimming and carrying eggs.

Computer reconstruction is required to make the necessary comparisons and measurements on the neural structures. To do this, a very sophisticated computer system incorporating elements on the frontiers of computer science is being used. It will be capable of constructing a three-dimensional model of a nerve system from photographs of sections, transforming the model into a two-dimensional graphical display with perspective, and permitting manipulation of the graphical image so that it can be studied from any viewpoint, enlarged, or reduced.

Professor Reddy has done extensive work with visual and voice input to computers at Stanford and Carnegie-Mellon.

"Despite some of the sensational stories which have appeared about computers and robots replacing human beings," says Dr. Reddy, "we are a long way from any such possibility. In fact, in recent years we have begun to realize how little we know and how much more work needs to be done before we can even begin to construct computers or robots which might perform any but the most simple functions comparable to the human brain."

Dr. Reddy notes: "In effect we're working with a mini-brain, or a limited neural system. Lobsters have various systems of nerve cells which perform limited functions."

Lobsters are being used for the study because the swimmeret system is one of the best understood small systems of nerve cells, a result of several years of intensive investigation. Dr. Davis has been one of the foremost researchers in these studies.

The study ultimately aims to provide "the most complete functional and structural understanding yet available of the neuronal control of a specific, relatively complex act of overt animal behavior."

Techniques developed in the study are expected to be directly usable in the analysis of other invertebrate nervous systems, and ultimately to the analysis of any restricted neural network.

Computerized ‘Totes’ Bring Faster, More Exotic Betting

Over 100 Varian 620/i minicomputers are following the races these days, thanks mostly to the likes of Quinella, Big Exacta and Superfecta.

On the outside chance you haven’t patronized your local track lately, the aforementioned are not three characters out of Damon Runyon. They’re feature bets, involving multiple selections. In the Superfecta, for example, you pick four runners to finish in order for a single race.

"Computers have speeded up race track betting and made operations more efficient," states Ray Hardin, Vice President, American Totalisator Company, Inc., a General Instrument Company. "But what makes the mini-computer indispensable in our ‘Tote Room’ is the demand on the other side of the window for Daily Doubles, Triples, and feature bets."

"Nothing less than a computer could handle the staggering combinations and provide adequate cross checking. The system must handle millions of dollars in parimutuel betting on-line, controlling ticket machines, computing odds and prices, and displaying instantaneous results from each race."

Hardin represents AmTote which serves as the "cash register" for hundreds of tracks throughout the U.S., Canada, and the Caribbean. Last year, over $6.5 million was bet through AmTote equipment. The company prints its own ticket stock, selling some 2 billion tickets per year in 190 different types of ticket categories.

The 620 can concurrently process Win, Place, Show betting and up to three feature pools in a single race. Odds are computed on every ticket sold; and the infield display boards are updated every 60-to-90 seconds.

Under ideal conditions, one 620/i could handle the on-line system. But low cost of the basic mainframe allows AmTote to supply three computers, two 620/i mini's operating in parallel, with an off-line system standing by in case of emergency.

The new system can support up to 1024 ticket machines. With computer control, more than one type of ticket can be sold at any window. In the old system, some ticket windows were overcrowded, others were underused. Now queuing patterns can be evened out.

Newspaper Computer System: Typeset-10 Introduced by Digital

Digital Equipment Corporation has announced a total newspaper computer system designed to handle all facets of a newspaper's operation from the reporter's first inputs on a story to the coordination of final edition circulation to the printing of payroll checks.

The TYPESET-10 system is built around a large-scale, fully redundant DECSYSTEM-10 computer and a sophisticated software package which allows up to 127 terminals to be connected to the system at one time.

With TYPESET-10, the timesharing monitor of the computer makes it appear to each user that he has exclusive use of the system. A reporter can be composing a story, the ad manager can be entering new ads or killing old ones, and production personnel can be outputting galleys for pasteup - all simultaneously. At the same time, the personnel department can be updating employee records and the business department can be using the DECSYSTEM-10 for such functions as billing for ads, circulation, payroll, accounts receivable and other data processing activities.

On the editorial side, copy can be input into TYPESET-10 from a variety of sources including CRT terminals, paper-tape readers, Teletype-terminals and OCR. Regardless of the input method, a name is assigned to the copy by the originator or by the computer itself, and is stored on the data base under that title. It is then available for rewriting and editing either from a CRT terminal or from hard copy produced by a line printer.

Once edited and approved, the copy is automatically justified and hyphenated, and transmitted directly to a wide variety of photocomposition machines for typesetting, eliminating the need for paper tape.