

computer notes

Gathered at a conference of the American Federation of Information Processing Societies in Atlantic City, N.J.

BIOENGINEERING

Medical computer to handle big load

Hospitals are assumed to be one of the prime future beneficiaries of the computer revolution, but the day when every patient's condition is automatically monitored and analyzed is some time off.

A step in that direction is a new signal processor system being built at the Upstate Medical Center in Syracuse, N.Y. The computer should be able to give 100 patients simultaneous electrocardiogram tests and predict a malfunction soon enough for something to be done about it.

Called BASP (Biomedical Analogue Signal Processor), the system is also designed to handle experimental data from animals in research laboratories. Some of the information that can be handled by computer, such as heart sounds and pulse trains on a nerve, take place at the rate of about 2,000 times a second.

Major problem in developing the system is to convert the continuous values—analogue signals—put out by monitoring instruments into the discrete pieces that a digital computer can handle. The conversion has to be immediate—storing the measurements and processing them later would need such a huge memory that costs would be prohibitive.

The new system, reports project director William J. Mueller, can handle a million incoming data points a second. It should be in operation by July.

HORTICULTURE

Computer simulates plant growth

A computer program that predicts the rate of growth of plants under varying climatic conditions has been developed by engineers at Texas Technological College.

The program, says Raymond E. Boche, could be applied to forest management, to measure, for example, the effect of various rates of thinning of young forests to reduce shading. Such a study in the field would not only take years to complete, but would include no assurance that different plots in the experiment had enough similar conditions to make the results reliable.

Next step in the investigation is to expand the computer program to take into account various soil management practices, such as fertilizer application and crop rotation, and to measure not only plant growth, but production of the marketable part of the plant being examined.

PROGRAMMING

Fourth computer generation delineated

The characteristics that will distinguish fourth generation computer systems from today's third generation equipment were outlined by Dr. C. J. Walter of the Autonetics Division of North American Rockwell, Anaheim, Calif.

He predicts that read-only memories, write-optional memories, associative memories and programmable logic arrays will replace operating system programs.

The development of today's large operating systems and large data management systems, he charges, has resulted primarily from a lack of understanding of the nature of applications to which computers can be put. Processor time is consumed by the operating system for internal scheduling, accounting and job handling rather than for job execution.

Dr. Walter says most of the data flowing in and out of computers today is unnecessary, and that on-line data collection will be the standard rather than the exception in fourth generation systems.

ORDERING BABEL

Standardized user control actions

As more and more companies and institutions, not equipped with their own electronic computers, make use of centralized remote-access installations, the differences between the systems have produced a "Babel of differing languages and control methods," according to John L. Little of the National Bureau of Standards in Washington, D.C., and Calvin N. Mooers of Rockford Research Institute in Cambridge, Mass.

Standardizing, by consensus, the keyboard control actions used in all these systems is out of the question, the researchers maintain, but it is possible to describe the control processes in common terms, which can make differing computer systems much more readily accessible to a variety of users.

There are only about a dozen logically distinct basic control actions which are crucial to giving the user access to the rest of the computer, say the researchers, and these can be assigned standardized symbols on a keyboard.

INPUT

Electronic ballpoint pen

An electronic ballpoint pen that translates written material to computer language and simultaneously transmits data to computers for storage or analysis has been developed by Sylvania Electric Products Inc. The device allows computer users to communicate with the machines through written symbols and diagrams rather than by formal mathematical terminology.

The pen uses an electronic notepad, a conductive surface on which electric waves move in vertical and horizontal directions. As it passes over the writing surface, the pen records its position by measuring the phases of the electric waves. The system can measure movements as small as three-thousandths of an inch.

Since the tablet is transparent, an operator can place it over a cathode ray tube display and change data already stored in a computer. In addition, the operator can place paper or film on the tablet to make a permanent copy of the graphics as he works.

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