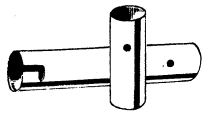


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TECHNOLOGY

Machine Reads Writing

➤ A MACHINE that automatically reads any person's handwriting with an accuracy near 93% has been built at Bell Telephone Laboratories, Murray Hill, N. J.

The machine translates the script into a standard set of symbols, in two steps, L. D. Harmon told a Symposium on Optical Character Recognition in Washington, D. C. The first step is to recognize the script letters, the other is to divide the words into individual letters.

The person writing the script to be identified by the machine is asked to write between a base line and a guide line above it, not to use capitals and to be as legible as possible. The last request is because "we seek to identify reasonably good writing before considering scrawl and scribble," Mr. Harmon said.

As the test sentences are written, signals showing the position of the stylus are obtained and recorded on magnetic tape. The tape then provides the input information for a computer-simulated recognition system.

Accuracy of letter identification is greater than 90% for a large number of writers and test sentences, Mr. Harmon reported. He noted that human readers rely heavily

on the redundancy of language and therefore on the use of context. This happens at the letter, word and sentence level, and frequently even beyond.

Most of the machine's errors in identification were made on the letters, "m, n, r, u, v, and w." These are "precisely the letters that humans find most difficult to identify out of context," Mr. Harmon said.

By instructing the machine on the chances of these letters being used in combination with one other letter, the accuracy of machine recognition was improved to approach 93%. Mr. Harmon said that studies are currently being made to use context at a more complex level, and to investigate the extent to which the writer can scribble and write above or below the specified lines.

Dr. Jacob Rabinow, president of the Rabinow Engineering Co., Inc., Rockville, Md., reported that the staff of his company believes anything now printed or typewritten can be read by a machine. The staff also predicts that within two years handwritten numerals can be read by machine, and that within five or ten years most handwriting will be readable by machine.

• Science News Letter, 81:102 February 17, 1962

TECHNOLOGY

Computers Increase Speed

➤ COMPUTER ENGINEERS expect to make machines that are capable of speeds far beyond the reach of the fastest computer presently in use; in fact, 1,000 times faster.

The nation's leading experts in the field said they expect a big breakthrough in the near future. Nanoseconds, or billionths of a second, and gigacycle, or a billion cycles per second, are expected to be only two of the many technical words to be added to the vocabulary by the impending breakthrough.

Present electronic computers work at megacycle speed, or about a million cycles per second, according to the experts attending a meeting in New York. They are now on the verge of building units that will operate at gigacycle speeds.

Problems that would take ten years to solve with present computers could be completed in three and a half days by the gigacycle computers. The same ratio is held for the speed of modern computers as opposed to calculators, and by hand calculation the problems would take several lifetimes.

Gigacycle technology is still very new. There are, however, several devices theoretically capable of producing a billion cycles per second and more. These include tunnel diodes, traveling-wave tubes, thin films and certain transistors.

According to one expert, the most promising device is the "cryotron," which is an extremely thin film carrying electrical charges and operating only at temperatures about 450 degrees below zero Fahrenheit.

At these cryogenic, or extremely cold, temperatures, many materials become "superconductors" of electricity. The expert said that present cryotrons can switch in about one two-hundred-millionths of a second, which is too slow. With improved and thinner films, he said, speed should become about one ten-billionth of a second.

Another expert described a "look aside" system, which permits a computer to get instructions from another unit, without needing access to the main memory unit.

One of the systems described permits the computer to figure in advance which "remembered" items will be needed soon and transfer them automatically to the memory unit that can be tapped most quickly.

• Science News Letter, 81:102 February 17, 1962

ORNITHOLOGY

Two More Whooping Cranes Join Flock

➤ A RECORD NUMBER of 38 whooping cranes is wintering at the Aransas National Wildlife Refuge on the Texas coast, the Department of the Interior said. This is two more than had been reported on previous counts this season and two more than the record of 36 set in 1961.

Refuge officials do not know when the two additional cranes, both adults, arrived at Aransas. The flock now consists of 33 adults and 5 young.

• Science News Letter, 81:102 February 17, 1962