INVENTION

Automation of Patents

Patent Office experts from all over the world met in Vienna to find ways in which machines could replace men in searching through millions of patents—By Elizabeth Hall

➤ INTERNATIONAL PATENT experts from all over the world met in Vienna to try to solve the same problem—how to get machines to take the place of men in searching through millions of patents and printed publications each time an inventor files an application.

If the average U.S. inventor wanted to patent an idea or an invention, he would first have to search through every other patent ever issued in his field. He and the patent office examiner later on would have to go through many other printed documents to see if the idea is new or just an improvement.

The mass of printed material is growing too big for human analysis. The international meeting of information retrieval patent office experts in Vienna was one of many groups trying to harness the terrific power of the computer to do the job of human hands.

One step leading to the eventual automation of the patent system was proposed by M. O. Wolk, a senior examiner at the U.S. Patent Office, and one of many contributors to ICIREPAT (international information retrieval organization for patent experts).

Mr. Wolk's proposal concerned the detailed diagram on the front of every patent, in particular, machine patents where the drawings are very complex.

The drawing on the front of every patent now issued in the U.S. has a number beside each important part. But each time an inventor, attorney, examiner or anyone else wants to know what the part is, he must turn back and forth between the front cover and the technical jargon inside.

Some machines can now reprint phrases by recognizing key words. Mr. Wolk expands this to include numbers buried in the specifications of a patent.

Eventually, he hopes, a machine could read a patent, remove the phrases describing a certain number, and reprint the phrase beside the number by the drawing on the front of the patent.

Time would be saved by explaining the patent on its cover, and the printed text would be "phantomized" (lightened from black to gray) so that it would not detract from the drawing.

Mr. Wolk also suggested that research work done in automatic language analysis could be applied to analysis, display, and storage of chemical, mechanical, and electrical processes.

In automatic language analysis, the machine looks up, in an electronic dictionary, all the words of a clause or sentence, and classifies and selects the verb, verb subject and verb object.

The machine would reduce each step of the patent process to these few simple words and reprint these words upon command in a diagram similar to a vertical sentence diagram. The other information of the clause or sentence would be printed out near to whichever of these words it modified, as shown by the complete language analysis.

The starting materials, or reactants, of a chemical process, by this analysis, turn out to be verb object and verb subject. This can be seen by analogy to the sentence "The boy hit the ball," where "ball" and "boy" are, respectively, verb object and verb subject, Mr. Wolk told SCIENCE SERVICE.

Whether applied to a chemical or a mechanical process, the form of the diagram would be the same. This form would ease understanding of the information in patents, Mr. Wolk said.

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INVENTION

Searching for Patent Like Needle in Haystack

➤ SEARCHING FOR AN IDEA in the U.S. Patent Office is like looking for a needle in a haystack—it takes a long time.

When inventors, examiners, attorneys or anyone else check to see if an idea has already been patented, they are confronted with a "haystack" of more than three million U.S. patents and several million foreign patents.

In Project HAYSTAQ, which is not an acronym but a catchy way of spelling haystack, the Patent Office and the U.S. Bureau of Standards are looking for machines that will replace men in this search, Herbert R. Koller of the Patent Office research and development section told SCIENCE SERVICE.

Symbolic of many other national and international research projects looking for the same thing, HAYSTAQ has concentrated primarily on chemical information but may have greater applications to all fields.

It deals with information with a network-like structure, such as the network of atoms and bonds that make up a chemical compound. The pieces that make up the structure are listed and coded for the machine.

Mr. Koller and Mrs. Ethel C. Marden of the National Bureau of Standards reported on the progress of HAYSTAQ, including an experimental computer file, at the Vienna meeting of ICIREPAT (an international committee of patent office experts for 18 countries concerned with cooperative research programs in information retrieval).

They set up an experimental computer file by encoding many chemical structures, and feeding them to the SEAC computer, at the National Bureau of Standards, one of the oldest electronic computers in existence. Several hundred searches were run.

"In general the machine made the right answer," Mr. Koller said. "We are in the process of analyzing why it sometimes pulled one structure without pulling another similar one."

Plans in the near future for Project HAYSTAQ include enlarging facilities for searching not only chemical structures but properties of chemicals, processes and mixtures. This involves using a linear cipher code, which consists of letters, numbers, punctuation marks and a strict set of rules for unambiguously and systematically describing a chemical structure.

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Honeywell

ARTIFICIAL SUN—The three-module solar array that duplicates solar radiation in space was designed at the Honeywell California Ordnance Center for testing space vehicles under conditions simulating sun's rays in interplanetary space. Technician Darrell Burnett measures the intensity and pattern of the radiation from the simulator.

METEOROLOGY

Robot Weather Station Installed in Buoy

➤ A ROBOT WEATHER station powered by electricity obtained by converting the heat released by radioactive strontium-90 has been developed for the U.S. Weather Bureau.

To be installed in a NOMAD-class U.S. weather buoy, the unmanned floating weather station will operate for two years at a stretch, unattended.

It will broadcast weather conditions at regular intervals, using a 60-watt electrical system run off nickel-cadmium batteries charged by atomic power.

Operating life of the atomic weather station is estimated to be ten years.

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