

Nerve fibre display on memory scope. The small circular objects (the individual nerve fibres) show clearly.

Les petits cercles représentent les fibres nerveuses telles qu'elles apparaissent sur l'écran cathodique.

Specialized techniques can be used to solve an ever-increasing variety of pattern recognition problems such as satellite photographic reconnaissance and aerial photographic reconnaissance. This involves processing masses of material in pictorial form that would be too laborious, time-consuming or expensive to do manually. The desired objects in the pictures are described in terms of quantities which the computer can be expected to find with the help of suitable programs. A characteristic of these problems is that there is practically no control over the objects to be identified in the picture. They may be of any size, shape, in any position or orientation. There is, however, control over the quality of the pictures, the contrast between the objects and their background, for example.

The best procedure in pattern recognition would be to write computer programs that would "teach" the computer the desired pattern recognition problem in a manner somewhat similar to the way humans are taught. Thus the programmer would teach to the computer the recognition problem by pointing out the objects to be recognized and then program it to process the data in the desired way. Ideas of this kind are, at present, called picture languages, i.e. computer languages constructed to handle picture material in a more generalized fashion.

At the National Research Council of Canada, pattern recognition research is being carried on in the Control Systems Laboratory of the Division of Mechanical Engineering. For the last six years Dr. Tonis Kasvand, has concentrated on specialized techniques and picture language studies. He initially became intrigued by problems posed to biologists by the nervous system, which grows, has the ability to learn and is influenced by diseases and environmental contamination.