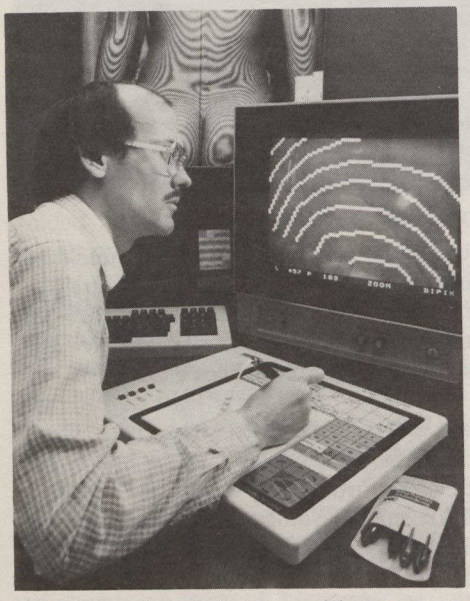
Computer cracks scoliosis analysis

A National Research Council physicist is developing a unique computer system able to look at a picture of a person's back and determine within seconds whether he has an abnormal spine.



The Citizen

Physicist Jim Pekelsky with computer he hopes will diagnose scoliosis.

The system, to be ready for testing in 1985, could give doctors their first fast, efficient way to screen patients for scoliosis — the curvature of the spine that afflicts one person in ten.

Physicist Jim Pekelsky says the system will be able to analyze three-dimensional pictures and correlate the surface of the back with the shape of the spine.

Detecting scoliosis is usually difficult and time-consuming. It is time-consuming because there is no quick, automated way to screen people for the disease.

Using a camera method called moire photogrammetry, doctors have been able to take a picture of the spinal column without using rays.

Although it is a good test for scoliosis, all the pictures have to be sorted by hand and analyzed by sight.

Jim Pekelsky's goal is to develop a machine through which moire negatives will be fed. The machine will be able to track the curves and contours of the back by analyzing the light and dark lines on each tiny negative.

Automatic analysis will enable doctors to quickly sift through thousands of photos. The technology will even be advanced enough to distinguish folds in clothing from folds in skin.

There is no known cause for idiopathic scoliosis, but some doctors speculate the curve may be caused by an abnormality in the signal from the brain to the spine. There is also evidence it may be linked to genetics.

In 1979, scoliosis specialist Dr. Gordon Armstrong led a team of Ottawa doctors in an experimental screening program using moire photogrammetry. They found several hundred cases among about 7 000 youngsters tested.

Children with minor curves are rarely treated unless they are experiencing pain or the curve appears to be worsening.

In Japan, every school student must be screened for scoliosis. The screening is done by teams of doctors who visually examine the spine for defects.

Some experiments using moire photogrammetry are now under way in Japan, but an automatic analysis method has not been developed. There is also screening by school nurses in some US states. Jim Pekelsky says if Canada moves toward mandatory screening, an automated analysis system is essential.

Small firm soaks market

A small Mississauga, Ontario company — Super Plastics Corporation Ltd. — can take pride in the fact that, in a relatively short time, it has captured a majority of the Canadian market for garden hoses. It has also developed a fair proportion of export sales to the United States.

From modest beginnings in 1975 with just a handful of employees, Super Plastics now runs three shifts a day at its primary plant in Mississauga, and last year acquired a second plant, with complementary facilities, in the Toronto suburb of Rexdale.

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"You'd be amazed how much you can fall behind in just one year if you aren't constantly devoted to improving your product. We try to upgrade our line in some respect each year."

Another component of Super Plastics' success has been the ongoing market research that allows management to have a clear idea of what initiatives are feasible at any given time.

That philosophy enabled the firm to expand last year, while Canada's economy over-all was sagging.

Super Plastics' hoses are sold by most of Canada's major hardware chains, under a variety of names. Standard lengths are 15.2, 22.9 and 30.5 metres, and the most popular colours are shades of green.

Making hose — especially a version with integral nylon reinforcement — is a multi-stage process. First, polyvinyl chloride (PVC) is heated to a molten flux, then extruded through custom-designed dies that form the inner tube. After cooling in a water bath, the continuous line of hose goes to a spindle-like unit where a nylon-fibre mesh is knit around the outside, then proceeds to a second die where the outer PVC skin is co-extruded around the whole product. Further cooling baths lead to the end of the production line, where the hose is measured, cut, coiled and the metal connectors put on.

(Article from Ontario Business News.)

Walter Reszytniak, president of Super Plastics, displays standard garden hose while a "soaker" hose waters firm's front lawn.