

Professor working on seeing-eye glove Camera-aided system will help visually impaired

BY THE CANADIAN PRESS
GUELPH, ONT.

Researchers at the University of Guelph are developing a camera-aided navigation system for the visually impaired.

The technology is "the logical extension of the walking cane," said Prof. John Zelek. The system provides visually impaired people with tactile feedback about their immediate environment.

Two mini video cameras wired to a portable computer — all of which can be worn on the user's body — feed information into a special glove worn by the user. Vibrating motors sewn into each finger send impulses to the wearer, warning of obstacles and terrain fluctuations ahead.

"Traditional navigation systems provide a steep learning curve and are often a burden," said Zelek. "We want an intuitive system for the user."

Images from the cameras are processed in the computer and translated into information about the location of obstacles within the camera's range up to a point. Then, the buzzer on the finger corresponds to the direction of that obstacle is activated.

For example, if the glove is worn on the left hand, an obstruction lying straight ahead would trigger the buzzer on the middle finger. If the obstacle is to the right of centre, the buzzer on the index finger would vibrate.

"The stimulus on the fingers is used to direct the user around obstructions in their path," said Zelek, who is also investigating possible new methods of conveying terrain information through a subset of the buzzers.

Zelek's technique of acquiring information about the environment is unique because of his use of a pair of 3-D glasses. Traditional techniques of information-gathering usually employ sonar or ultrasonic waves which are bounced around objects in the room, similar to a bat's method of navigation.