

Computer aided vision assistance for human blind

Abstract

One of the main difficulties experienced by the blind people is navigation without collision. It is well known that blind individuals are sensitive to sound. This paper presents a real time scheme in providing vision substitution to visually handicapped people. A prototype system had been constructed. It has a laptop computer, a headgear with a digital video camera and a set of stereo earphones interconnected. The images of the environment are captured by digital video camera. The critically designed image processing software processes the image to locate the object and its boundaries. The image processing software is designed to incorporate some of human vision properties using artificial intelligent techniques. The processed image is mapped onto structured stereo sound patterns, so that the blind can understand the environment around him through the set of stereo earphone. The prototype equipment is used to train blind volunteers with the acoustic patterns. Suggestions from the blind volunteers regarding pleasantness and discrimination of sound patterns were also incorporated in the system. The prototype equipment is tested by blinds for their successful indoor collision free motion and navigation within a building.