Computer vision-aided walking assist system for blind persons

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ABSTRACT

"Vision" for the most rely on human perception of moving organs, can help people determine the road conditions ahead, such as whether there are obstacles, moving objects close to the object distance, and so on. Visually impaired may be congenital or acquired loss of people that rely on "visual", Can not accurately determine the road conditions, which led to road safety. Visually impaired to use the traditional white cane, guide dogs and other assistive devices, and can get very limited information, and the latter training is costly. Therefore, this study expected to computer vision technology to simulate human judgments and reaction behavior, to help the visually impaired to reduce barriers between the road. In this study, on the road in front of the object is divided into two major categories of mobile and fixed obstacles were handled in different ways to detect and determine the barrier properties, and calculate the position and distance of obstacles, to provide the visually impaired to avoid the march route, and to provide the voice of warning to the visually impaired, in order to avoid obstacles and assist the visually impaired and other safe walking alone in the target. Way to simulate shooting situations the user in front of the road conditions were simulated in order to avoid the eyes and eye cover walking, then set the camera hanging around his waist, shooting a total of 90 segment analog display, and then use the experimental system to make judgments on the simulation film. For the front of the object can be judged 92% of the barrier position.

Keywords : computer vision、obstacle detection、obstacle avoidance、distance measurement

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