Outdoor mobility assistive technologies for people with vision impairment or blindness – a state of the art

ABSTRACT

World Health Organization (WHO) estimated that about 1.3 billion people live with a level of vision impairment. Outdoor mobility represented a big challenge for people with vision impairment or blindness (VIB). Developing assistive technologies (ATs)to facilitate the mobility of people with VIB represents a vital solution since the last two decades. Researchers investigate in detecting and avoiding static and dynamic obstacles in the indoor and outdoor environments. However, many of the proposed systems have not been addressing user requirements. The purpose of this paper is to stimulate researchers for more work to overcome the challenges of outdoor mobility of people with VIB. The study selected academic research from the most recently proposed mobility ATs. Then, it classified them technically, based on the used technology to; camera, sensors and combination of camera and sensors. Next, it presented the general features and weaknesses of each technology. Finally, it illustrated the strengths and drawbacks of each AT, depending on the technical factors and the users' acceptance from the authors' points of view. Consequently, this work explains the reasons behind the rare use of the current ATs.