Artificial Intelligence Based Solution for Navigating Vision Impaired Individuals: A Review

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Abstract

Vision impaired individuals face difficult situations while they are travelling independently. The major issues include difficulty in reaching the destination location independently. This review aims to evaluate current solutions and propose an innovative solution to enhance the navigation of vision-impaired individuals. This research aims to systematically evaluate existing literature on assistive technologies for vision-impaired individuals and to introduce a novel solution with emerging technologies to enhance the navigation of them. As per the PRISMA guidelines, a comprehensive literature search was conducted by using multiple academic databases such as IEEE Xplore, Google Scholar, IJEECS, and MDPI. Studies were found for their relevance, focusing on assistive devices, technologies, and applications designed to aid vision-impaired individuals. Data were gathered and analysed for identifying the gaps. This review found the wide variety of technologies such as wearable devices, mobile applications, and mobility aids. However, there are significant gaps remaining in the integration of real-time navigation and personalized assistance. According to the findings, this paper proposed a new solution that combines computer vision (CV) and artificial intelligence (AI) based personalized assistant to create a real-time navigation system for vision-impaired individuals. The proposed solution aims to bridge the gaps in existing solutions and future studies should focus on implementing this technology in the real world.

Keywords: *Assistive device, Assistive software, Computer vision, Object detection, Vision impaired*