

## **Abstract**

The development of AI-powered smart glasses for the blind and visually impaired represents a groundbreaking step in assistive technology. These glasses aim to enhance the independence, mobility, and quality of life of individuals with visual impairments by leveraging advanced computer vision, artificial intelligence (AI), and real-time audio feedback. By using a combination of cameras, sensors, and machine learning algorithms, the glasses can process visual information and provide users with descriptive audio cues, object recognition, facial recognition, text-to-speech conversion, and environmental navigation assistance. This paper explores the design and functionality of such a device, focusing on key features like obstacle detection, text reading, facial recognition, and route guidance. The AI component continuously improves its accuracy through user feedback and adaptive learning, ensuring the device becomes increasingly effective over time. The smart glasses are designed to be lightweight, non-invasive, and user-friendly, integrating seamlessly into the daily lives of users while preserving their autonomy and privacy. Additionally, the integration of cloud-based AI systems allows for real-time data processing and updates, ensuring the device remains responsive and adaptable to various environments and challenges. Ethical considerations regarding privacy, data security, and accessibility are also discussed, with an emphasis on designing a device that respects user autonomy and dignity. This technology has the potential to revolutionize how visually impaired individuals interact with the world around them, offering not only practical solutions but also empowering users to lead more independent and fulfilling lives.