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(57) Abstract :
The Solar-Powered Smart Cane with Obstacle Detection is an advanced navigation aid designed for visually impaired individuals, integrating multiple assistive technologies to enhance mobility and safety. The cane incorporates ultrasonic sensors for real-time obstacle detection, providing feedback through vibration or voice alerts. A GPS navigation system offers route guidance and integrates with a smartphone app for turn-by-turn directions and public transport assistance. Bluetooth connectivity enables location sharing, emergency alerts, and smart assistance. The cane features an AI-based voice assistant for hazard warnings and navigation instructions. Terrain adaptability sensors analyze ground conditions to alert users about hazards such as potholes or stairs. The rechargeable lithium-ion battery, with an optional solar charging feature, ensures long-lasting power. A weather-resistant, durable design and emergency alert system provide added security for users.

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