# Smart Canes

For an efficient reintegration of the disabled people in the family and society, it is required to assist their diminished functions or to replace the totally lost functionalities. Smart cane device is an electronic travel aid for persons with visual impairment used in conjunction with a white cane for mobility and navigation. Traditional white sticks can only alert users to objects it touches. The smart cane, however, uses ultrasonic waves to “see” obstacles in advance. It allows, for example, the user to avoid lampposts and bicycle racks ahead of time. It bestows haptic feedback to the user in accordance with the position of the obstacle.

This efficient tool can help radiate signals well in advance to prevent many kinds of accidents from happening. It guides the user with their walking experience and gives them a better understanding of their surroundings to make informed decisions. It is a blessing for those people with vision impairment who live alone and have to go through their daily routine on their own and basic things like crossing the road can sometimes be very difficult with them but smart canes let them have the freedom to move without worrying.

### *General Characteristics of a smart cane*

- Ultrasonic sensors to detect obstacles. (Sometimes user adjustable).
- GPS integration with the device.
- Speakers for alerts or notifications.
- Rechargeable Li-ion battery.
- Discrete haptic feedback through grips.

## AssisTech

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In 2014, a group of IIT students took up a challenge to design something that could make life much easier for the visually impaired. They developed a smart cane for visually challenged people. Below are the features of the smart cane which cost around **Rs. 3500**.

### *Features*

- Detection range of 1.8 meters indoors
- Detection range of 3 meters outdoors.
- Detect obstacles above the knee level, within the range.
- It comes with a 10-hour battery backup.

The warranty for a Smart Cane Device lasts for twelve months from the date of purchase. A valid proof of purchase may be required to prove eligibility. In the absence of a valid proof of

purchase, the warranty period is measured from the date of sale from Phoenix Medical Systems Pvt. Ltd. to the authorized community partner organization.

*Specifications*

| | |
|---|---|
| Dimensions (H x W x D) | (240 x 53 x 32) mm |
| Grip Height | 190 mm |
| Maximum Grip Diameter | 32.5 mm |
| Sensor-angle Settings | 3 Settings (0°, 17.8° and 35.6°) |
| Device Weight with Battery | 136 grams |
| White Cane Diameter Range | 12.8 mm to 13.04 mm |
| SmartCane Material | Polycarbonate |
| Electrical Protection | Class II, Type BF |
| Operating Temperature | -10° to +50° C |
| Storage Temperature | -25° to +70° C |
| Ingress protection | IP22 |
| Average Vibration Intensity | 0.8 m/sec2 |
| Minimum Vibration Intensity | 0.6 m/sec2 |
| Maximum Vibration Intensity | 2.3 m/sec2 |
| Audible Alarms | > 65 dB(A) |
| White Cane Length | 100cms |

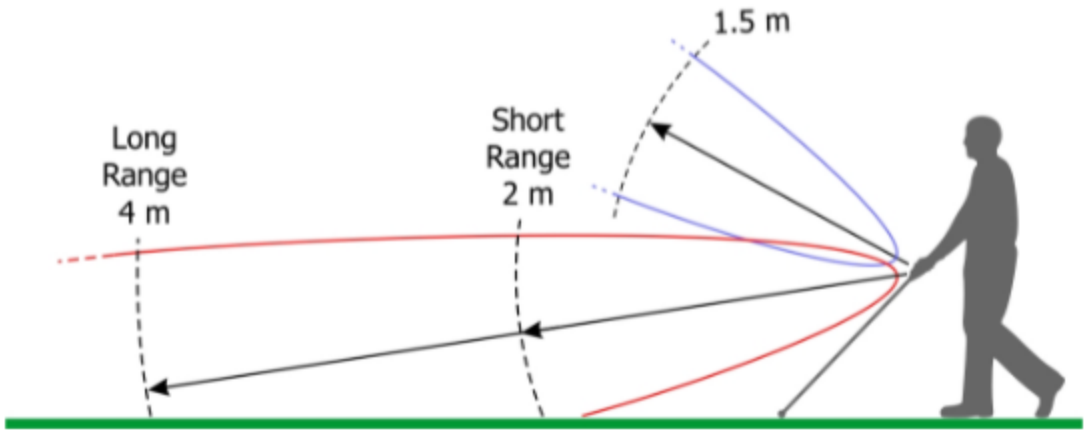
## Ultracane

UK
44 (0)7496 522033
sales@ultracane.com

Price - 590 Euros

It utilizes state-of-the-art ‘narrow beam technology’, allowing the user to safely avoid obstacles and navigate around them, both in the user's forward path and just as importantly, giving valuable protection at head/chest height.

It detects street furniture and other obstacles **within 2 or 4 meters** (depending upon the settings) and it does this by emitting ultrasonic waves from two sensors. It also detects up to **1.5 meters ahead at chest/head height**, giving tactile feedback to the user through two vibrating buttons on the handle over which the user places their thumb. The two buttons, when vibrating, indicate the direction of the obstacle; the frequency of the vibration lets the user know the proximity of the obstacle.
Sizes available range from 110cm to 150cm in 5cm increments.




## Bawa Cane

CEO & Founder - Daniel Vong & Stella Vong

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Malaysia

Typically canes only detect obstacles below the knee and neaby. The BAWA Cane can detect obstacles in a **range of up to 1.2 meters (4 feet)** above the waist, front side and send signals about them to the user. With such coverage, this device helps avoid higher obstacles like signs, branches, etc.

The cane uses dual sensors, based on the Internet of Things (IoT) and big data analytics to detect these obstacles. This allows the cane to detect a range of objects, from things that are as small as a tennis ball to larger objects. As soon as it detects it, it will send a beeping signal. The device's battery life lasts up to **48 hours per battery charge**. The entire **charging time is one hour**. It works both indoors and outdoors, regardless of the weather conditions. However, there are no guarantees that it will work normally if used in water or other liquids.

This device also comes with advanced features like voice navigation, prediction, and personalization by connecting cane to BAWA Application on mobile. For instance, it can geotag larger obstacles for future reference. All you need to do is connect the device wirelessly to a smartphone.

## WeWalk

CEO & Co-Founder: Sadık Ünlü

33 Queen Street,
London, EC4R 1AP,
UK

Price: 599 Dollars

WeWalk created a high-tech handle that is attached to the top of a white cane. Its built-in ultrasonic sensor can detect high impediments, like traffic signs and tree branches that users may encounter when walking outside, and vibrate to notify them. Users may also link their smart cane to a specialized smartphone app to determine their position, navigate to other destinations, and get public transportation information. The gadget responds to voice commands through a built-in speaker or a set of Bluetooth headphones. If a person misplaces their cane or phone, they can receive audio alerts to assist them to find it. WeWalk is constantly adding new features and integrations.

### Features

- Detect obstacles above chest level.
- Pair your phone with WeWALK and control it over WeWALK's touchpad.
- WeWALK offers you a unique experience with clockwise, turn-by-turn navigation options. You are also able to adjust the text size and screen colors based on your choice.
- Voice commands - Learn the popular places around you such as restaurants, cafes, and shops with just a click.
- Bus stops, timetables, and more are on your cane now. All you need to do is enter 'nearby stops' on the menu.


## Specifications

- Ultrasonic Sensor and Haptic Feedback for Obstacle Detection
- Connects to Smartphones via Bluetooth 4.2.
- Android 4.4 and iOS 10 and above.
- Control - Gestures via WeWALK touchpad.
- Smart cane handle weight: approximately 252 grams (0.55 pounds)
- Battery life up to 20 hours (Also depend upon the frequency of use). 1000mAh.
- Multi-Language Support
    - English, French, Italian, German, Russian, Spanish, Portuguese, Turkish, and Arabic.
- 1-year warranty provided.

## Saarthi Smartcane

Founder: Mr. Hunny Bhagchandani

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### Features

- The device offers 99.7% accuracy in obstacle detection and 98.2% precision in angle accuracy.
- Saarthi offers 3 different ranges for the user to toggle between – 2 feet (indoors), 4 feet (outdoors), and up to 8 feet (open areas).
- The battery is rechargeable by any micro USB charger and one charge lasts for more than 30 days with daily usage. It has a battery backup of 7 days.
- Mountable on any White Cane.