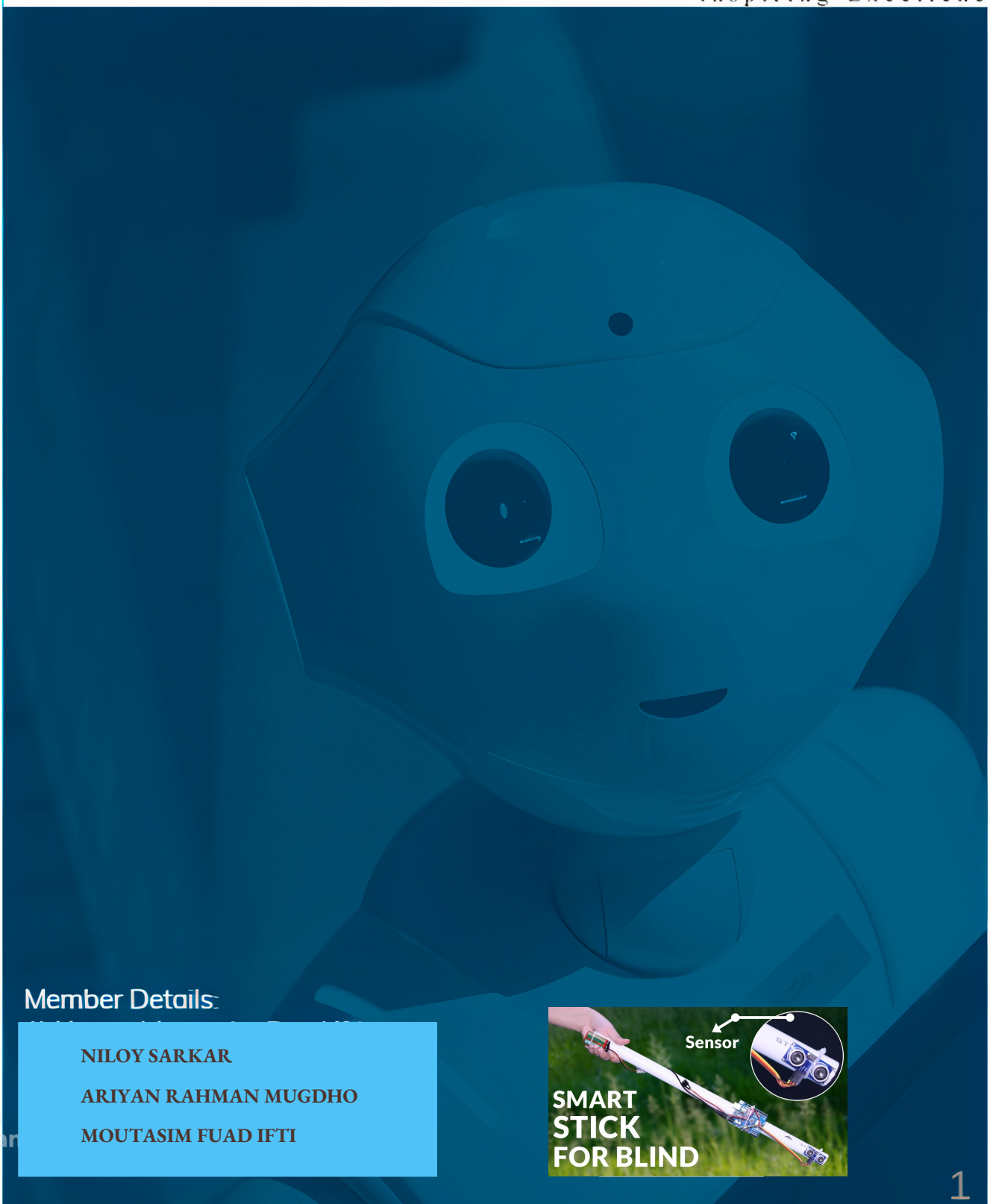
SMART BLIND CANE

A Robotics Project

BRAC UNIVERSITY

Inspiring Excellence

USER MANUAL



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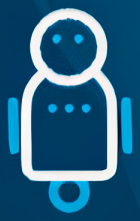

Manual for Smart Blind Cane

Our smart Blind Cane is designed for helping the blind members of our society to navigate around the hectic and busy environment.

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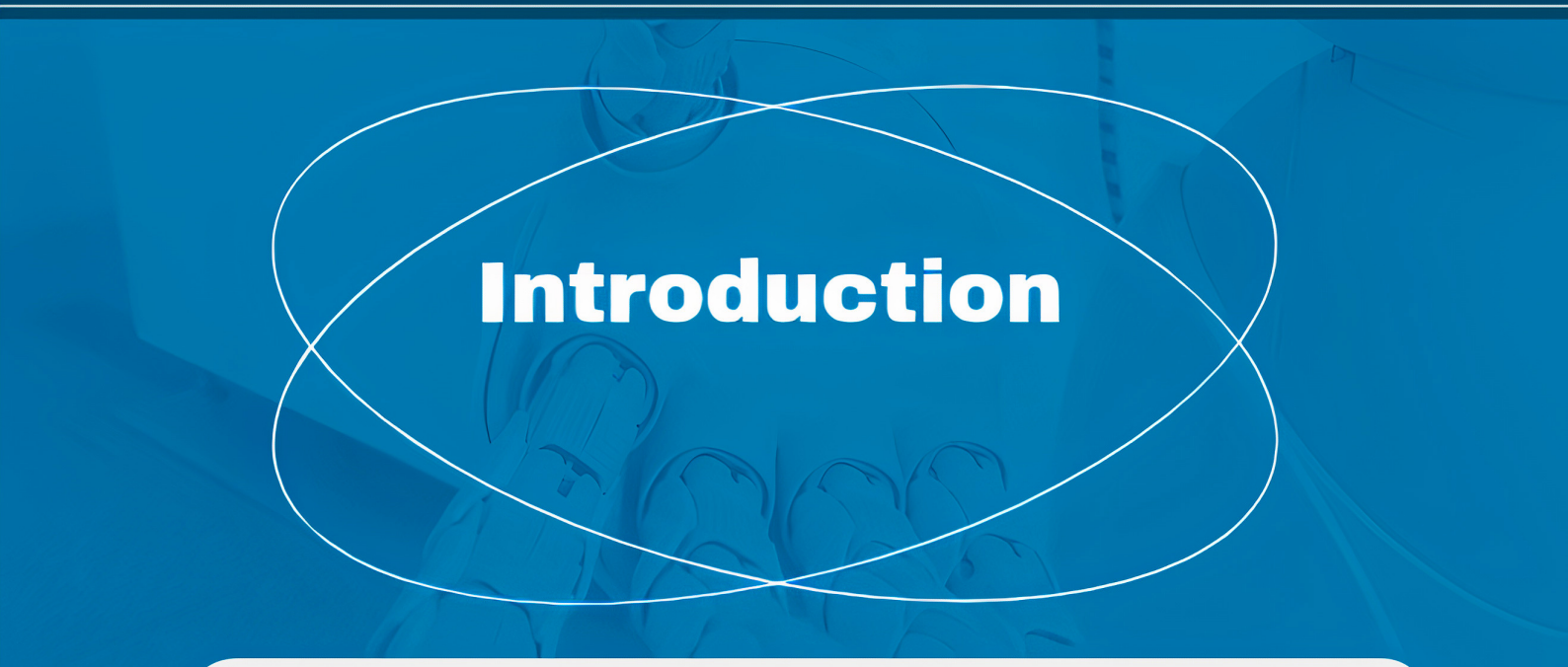


Introduction

Welcome to the user manual for your Smart Blind Cane. Our device enhance the mobility and safety of visually impaired individuals.

This cane integrates advanced sensor technology, location tracking and emergency communication capabilities to provide users with greater awareness of their surroundings and added security.

By combining ultrasonic obstacle detection with GPS positioning and cellular communication, our device aims to be a reliable and user friendly companion for the visually impaired in navigating thier daily life.

Features

Obstacle Detection

Employs an ultrasonic sensor with a servo motor for dynamic scanning of the path ahead, detecting obstacles at various angles

Real-time Distance Feedback

Provides the user with feedback from buzzer indicating the proximity of detected obstacles

GPS Location Tracking

Integrates a NEO 7M GPS module to accurately determine the user's geographical coordinates

Emergency SMS Communication

Utilizes a SIM800L GSM module to send an SMS message containing the user's location to a pre-defined emergency contact number when triggered

Compact and Ergonomic Design

Designed to be lightweight and easy to handle, maintaining the familiar form factor of a traditional blind cane

User-Friendly Operation

Simple and intuitive controls for activation and emergency triggering

Components

1) Cane Structure

2) Ultrasonic Sensor HC-SR04

3) Servo Motor SG90

4) Arduino Uno R3

5) NEO 7M GPS Module

6) SIM800L GSM Module

7) Power Supply Battery

8) Breadboard and Switches

Setup

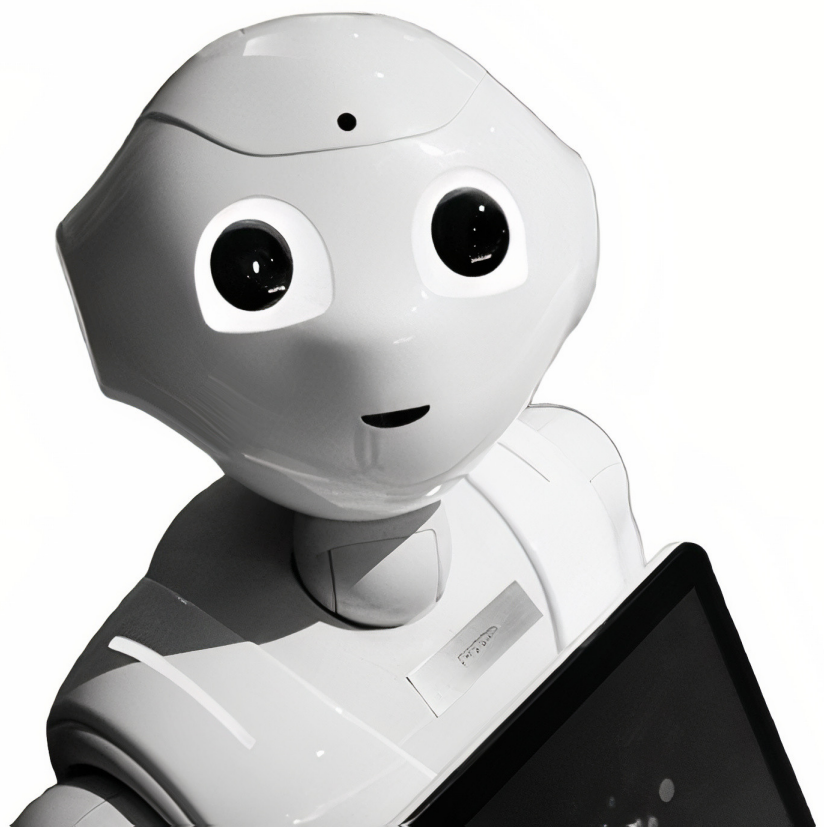
1) Insert SIM Card (SIM800L)

2) Charge the Battery

3) Familiarize yourself with the Controls

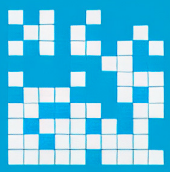
4) Designate Emergency Contact

5) Initial Testing



Operating Instruction

- To power on the Smart Blind Cane, press and hold the power button for a few seconds until an indicator light turns on with sound from rotation.
- Once powered on, the ultrasonic sensor will automatically begin scanning the area in front of you as the servo motor rotates.
- As the sensor detects obstacles within its range, you will receive feedback from the buzzer.
- Use the feedback to understand the distance and approximate direction of obstacles in your path and navigate accordingly.
- In an emergency situation where you require assistance, press and hold the emergency trigger button for a few seconds.



Maintenance

Cleaning
Wipe with damp cloth, avoid electronics/chemicals.

Storage
Store dry, away from extremes/heavy items.

Battery Care
Avoid full drain, store at 80% long-term.

Sensor & Motor Care
Check smooth operation/damage.

Cleaning
Ensure SIM inserted/active/validity.

Troubleshooting

Problem	Possible Cause	Solution
No obstacle detection feedback.	Power is off. Battery low. Sensor obstructed.	Ensure power and Charge battery. Remove obstruction.
Inconsistent sensor detection.	Sensor is dirty. Loose wiring.	Clean sensor. Recheck wiring. Restart the cane.
Emergency SMS not sending.	SIM card missing/ invalid. No network coverage/low battery.	Ensure working SIM. Ensure network. Charge battery.
GPS location inaccurate.	Weak GPS signal. GPS module malfunction.	Move outdoors or under sky and restart the cane.
Servo motor not rotating.	Loose wiring. Motor malfunction. Power Issue.	Recheck wiring. Charge battery. Restart the cane.
Cane not powering on.	Battery drained. Power issue. Switch issue.	Charge battery for an extended period. Check switch.

Thank you for using our product.

All our components were purchased from roboticsbd, which is located in Uttara, Dhaka

We are not responsible for any faulty components.

store.roboticsbd.com