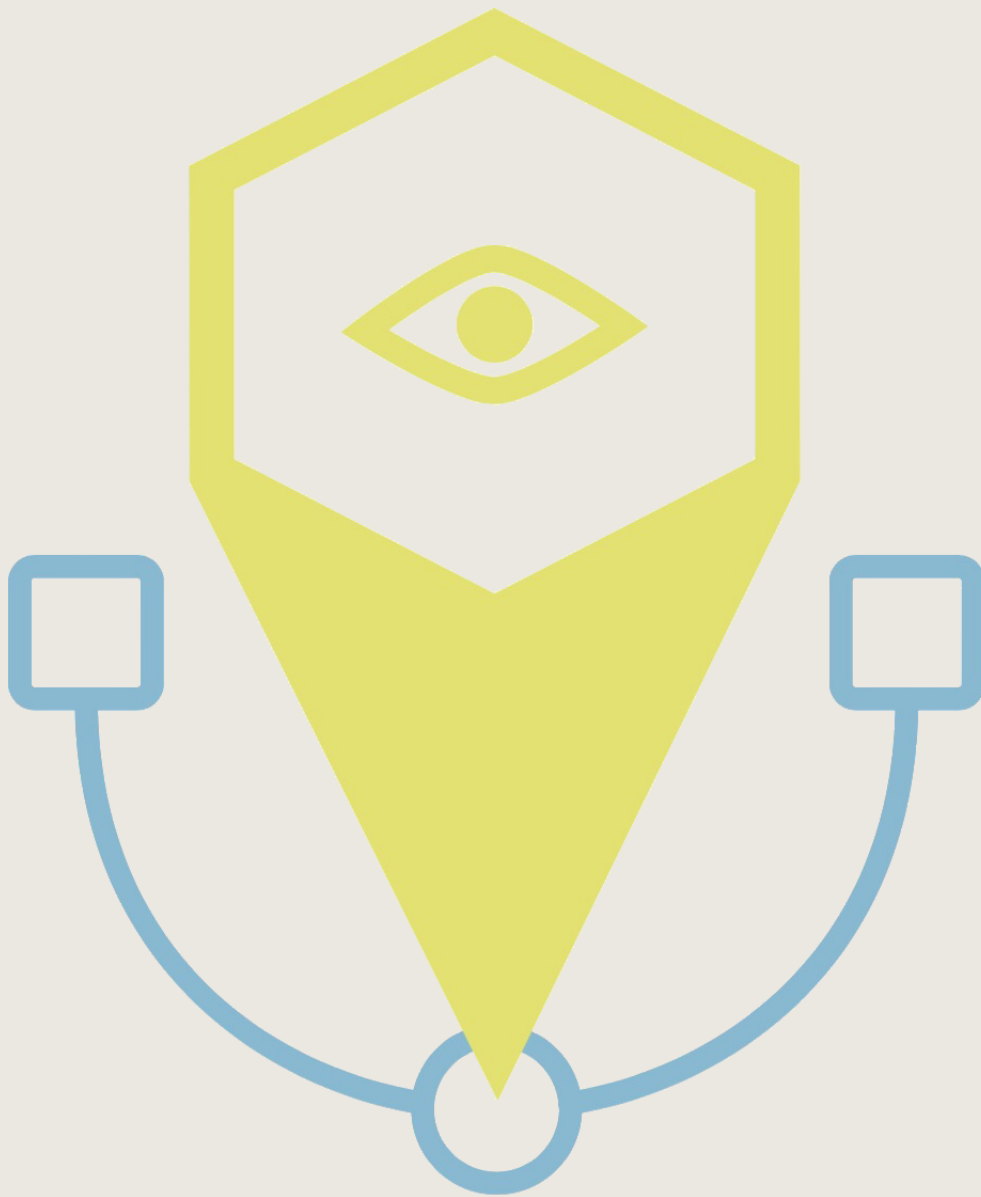


Moderamen App

User Manual



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What is the Moderamen App?

Navigating the world as a blind or visually impaired individual is no easy feat. So much so, that many of these individuals choose to stay close to home, feeling as though the "world is not made for them"[1]. Without proper assistance, the visually impaired risk exposing themselves to a variety of threatening terrains. Some of these risks include unforeseen obstacles on the ground, doorways opening and closing, and even getting lost while trying to navigate a building. The Moderamen team wants to reduce the problems that the visually impaired encounter while navigating the world through our user-friendly mobile application. Our app, Moderamen, provides both visual and vocal directions for anyone who requires assistance while navigating indoors. It will not only provide clear and precise navigation instructions but also provides collision detection through the phone's camera module. We hope that anyone who uses our app feels less anxiety when it comes to navigating the world and makes it to all their destinations unharmed and unphased.

Terminology

Voice Command

Voice commands allow the user to control an application by speaking commands through an audio input device rather than by using the mouse or keyboard, giving the user hands-free control of the application.

Moderamen

Management or Direction

Mobile App (Application)

A mobile application, most commonly referred to as an app, is a type of application software designed to run on a mobile device, such as a smartphone or tablet computer.

API (Application Programming Interface)

A set of subroutine definitions, and tools for building software

GUI (Graphical User Interface)

A form of user interface that allows users to interact with electronic devices through graphical icons and visual indicators such as secondary notation, instead of text-based user interfaces, typed command labels or text navigation.

VUI (Voice User Interface)

Makes human interaction with computers possible through a voice/speech platform in order to initiate an automated service or process.

OS (Operating System)

An operating system is system software that manages computer hardware, software resources, and provides common services for computer programs.

Android

Android is a mobile operating system based on a modified version of the Linux kernel and other open source software, designed primarily for touchscreen mobile devices such as smartphones and tablets.

iOS

iOS is a mobile operating system created and developed by Apple exclusively for its hardware; including the iPhone.

Camera Module

A camera module is just a more technical way of saying the camera on the back of your mobile device.

Blueprint

In architecture and building engineering, a blueprint or floor plan is a drawing to scale, showing a view from above, of the relationships between rooms, spaces, traffic patterns, and other physical features at one level of a structure.

Equipment and Requirements

Mobile Operating System

Whatever device you decide to use must run on either Android or IOS. This is because our application is only available to download through the Google Play Store and the App Store.

Mobile Device

To use our application, you need to have access to some form of a mobile device such as a phone or tablet. We recommend that you use a smaller device such as a phone; since our application is most useful when held in front of your body to enable obstacle detection.

Camera Module (*optional*)

Our application uses your device's camera module, if allowed and possible, to detect obstacles not included in the building's layout design. Possible obstacles consist of wet floor signs, people, and open doorways. Our app will still provide directions without this added safety feature but will not be as useful as it could be. Thus, while not required,

our application is most useful if the device you choose to navigate with has a working camera module.

Extra Assistance (*optional*)

While our application is designed to be used without assistance, we always recommend never to navigate alone. Getting assistance from those who are capable of using our GUI is always recommended. We especially urge new users to seek help from friends, family, or caretakers when using the app until you feel genuinely comfortable using it alone.

Voice Commands

Utilizing voice commands is the primary way you can interact with Moderamen. If you ever plan on using our application without assistance from someone who is not visually impaired, you need to understand how to interact with our VUI. Here is a list of supported voice commands and features.

Set Destination

Where {destination} is the desired location you would like to navigate to, or as a caretaker, send your dependent to. If the destination is valid and supported, then Moderamen will automatically start navigation.

VUI	Options
User Command	"Go to {destination}" "Navigate to {destination}" "Directions to {destination}"
App Response	"Did you want to begin navigation to {destination}?"

Verify Navigation

If you ever want to verify that you are navigating to the correct place or you forget where you were navigating to, simply ask one of the following questions.

VUI	Options
User Command	"Where am I going?" "What is my current route?"
App Response	"You are currently navigating to {destination}?"

Navigation Status

If you ever want to better understand where you are in your current route, simply ask one of the following questions.

VUI	Options
User Command	"Where am I?" "How far away am I?" "How much longer?"
App Response	"You are currently {distance} feet from your {destination}?"

Start Navigation

Once you have asked to begin navigation to a specific destination, the app will respond with a question to ensure you are ready to begin the route. You must now respond with the commands below so that the app understands if it should begin navigation.

VUI	Positive Options	Negative Options
User Command	"Start", "Yes", "Go", "Okay", "Begin"	"No", "Stop", "End"
App Response	"Starting navigation to {destination}?"	"Navigation Stopped"

Pause Navigation

You can pause your navigation directions at any time. Simply state one of the commands below to inform the app that you would like to pause the navigation for the time being.

VUI	Options
User Command	"Pause Navigation", "Pause Directions", "Pause Route"
App Response	"Pausing navigation to {destination}?"

Resume Navigation

If you have paused your route to a specific destination, you can resume it anytime before it has expired (30 minutes after pausing). Simply state one of the commands below to inform the app that you would like to resume a previously paused navigation.

VUI	Options
User Command	"Resume Navigation", "Resume Directions", "Resume Route"
App Response	"Resuming navigation to {destination}?"

End Navigation

If you would like to end navigation at any time, simply state one of the commands below to inform the app that you would end navigation to the specified destination.

VUI	Options
User Command	"{key-word} Navigation", "{key-word} Directions", "{key-word} Route" {key-word}: "Stop", "End"
App Response	"Stopping navigation to {destination}?"

Cautions & Warnings

Pay Attention to Surroundings

Although our app tries its best to provide accurate and safe navigation, errors can still occur. Therefore, it is essential to be aware of your surroundings at all times. Never completely obstruct your ability to hear while using the app. What we mean by this is to never wear headphones/earphones in both of your ears at anytime while using our app. Even though this might provide you with clearer audio, it also restricts your ability to understand your surroundings. We recommend wearing one head/earphone, while using our app, to provide an excellent VUI experience and also provide the ability to detect your surroundings through audio cues.

Never Solely Rely on the Moderamen App

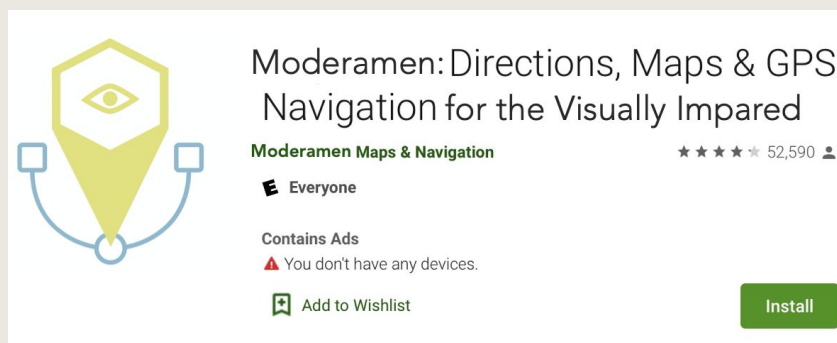
While we desire to have every building correctly mapped out and the ability to detect all obstacles through your phone's camera, that is, unfortunately, not the reality. Our app is not to be used as your sole means of navigation and should instead be used in combination with existing tools, infrastructure, and other systems to provide the safest and most efficient means of navigation. We suggest that you also seek assistance from a cane, guide dog, braille, or even a caretaker while also using our app.

Using the Moderamen App

I. Downloading the App

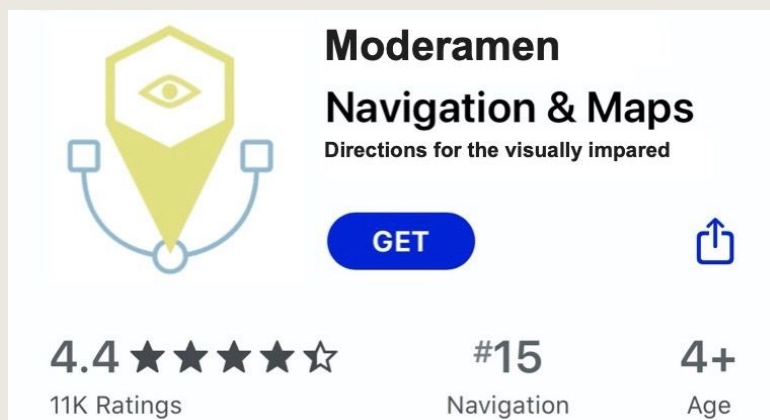
Android Mobile Device

If you have an android phone, simply launch the Google Play Store application and search “Moderamen” in the search bar. Once all the options have loaded, scroll down until you see our logo and then select the “Install” button.



IOS Mobile Device

If you have an IOS phone, simply launch the App Store application and search “Moderamen” in the search bar. Once all the options have loaded, scroll down until you see our logo and then select the “get” button.



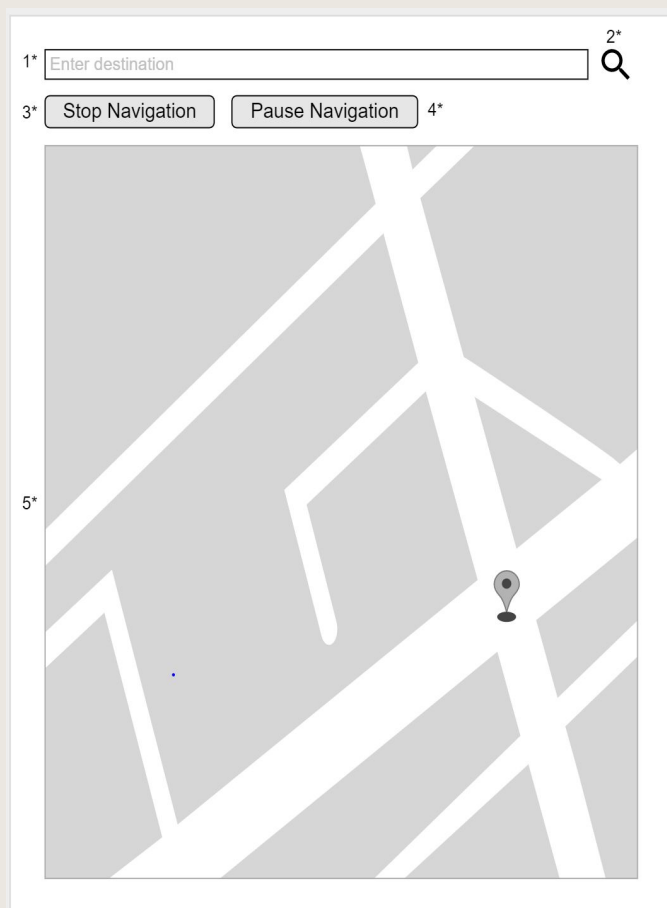
II. Opening/Starting the App

Using your mobile devices built-in accessibility features or through the assistance of a caretaker, navigate to the Moderamen application and launch it. Once the app has been opened, you should experience the same GUI and VUI across all devices, no matter your mobile device's OS.

III. Using the App

With Assistance

application, then they can mostly rely on our GUI. Here, a non-visually impaired user can navigate our interface as they usually would on nearly any other navigation application. The image and descriptions below provides a clear break down on all the parts of our GUI with a nice description.



1*. The caretaker enters the full address of where they would like to navigate their dependent too.

2*. The caretaker selects the search icon to initiate a navigation session to the address entered in the text box. A voice message will be played indicating that navigation has started.

3*. The caretaker selects "Stop Navigation" to end the current navigation session if one is active. The address text box and map components are both reset. A voice message will be played indicating that navigation has ended.

4*. The caretaker selects "Pause Navigation" to pause the current navigation session if one is active. A voice message will be played indicating that navigation has been paused.

5*. The major component of the user interface is a dynamic and interactive map, which will display the current area and the destination location to the caretaker.

****.** Toggle Screen Visibility by double tapping anywhere on the screen with two fingers.

Without Assistance

If you plan on using our application without assistance, then you first need to become comfortable with the commands used to interact successfully with our VUI. We believe we have made the commands quite intuitive, so it hopefully won't be much of a struggle to remember and speak the correct commands when needed.

Using Obstacle Detection Feature

If you would like to use the obstacle detection feature in the Moderamen application, hold the phone against your chest. Hold it such that the back of your phone is facing away from your body, meaning the screen is facing you. When the app detects that is held correctly, it automatically will start collision detection and alert you if you are nearing an obstacle.

Conclusion

Our goal at Moderamen is to reduce the anxiety that comes about when a visually impaired individual navigates a new or changing terrain. We hope that our app successfully fulfills this goal and increases the efficiency and safety of navigation indoors for the visually impaired.

Troubleshooting

Navigation Unavailable

Unfortunately, we only provide navigation assistance in select buildings as of now. This is because, in order to ensure that all our users receive the best directions possible, we need to ensure all the buildings we provide services to are correctly mapped out. Thus,

if you would like a particular building added to our applications navigation database, please contact the building owners/management and ask them to send their buildings blueprints to us ASAP. Until then, you can always use your device's camera module to detect obstacles around you as you navigate indoors.

Incorrect Navigation

If you are ever routed incorrectly, this could be due to building owners changing the layout of their building without telling us, or we have a bug. Either way, we want to fix it ASAP. Thus, if we provide navigation assistance in a particular building, but you are routed incorrectly, please let us know immediately. We take this issue seriously here at Moderamen as we want to reduce the risk of navigating indoors, not add to it.

Obstacle Detection Issues

One of our favorite features of our app is the ability for obstacle detection using your device's camera module. However, this is an imperfect system that will continue to advance with each app update. While we desire to catch all possible threats around you, we, unfortunately, are not quite there yet and recommend not solely to rely on it during navigation. If you have any recommendations on how to better our detection capabilities, please feel free to contact us and let us know.

App not Working Correctly

We strive to create the best user experience possible, but we can't promise always to be perfect. Thus, if you experience any issues while using our app, we recommend you fully close the app and restart it. If the issue still exists after doing so, please reach out to us and let us know so we can try and fix it ASAP.

Any Other Issues

If you experience any other issues not covered above, please reach out to us and let us know as we want to deliver the best user experience possible.

FAQ

- **Does Moderamen cost money?**
 - We can proudly say that our Moderamen application is 100% free and will never contain any hidden fees.
- **How do I get a particular building added to your app?**
 - Our hope is to one day have nearly every building mapped out in our application. However, this is a long and tedious process, and with your help, we can make this dream a reality quicker. If you know of a building you would like added to our application, please reach out to us and let us know. Also, if you can ask the building owners/management to submit their building's blueprints to us, that would be incredibly helpful as well.
- **Can I still use your app if I'm not visually impaired?**
 - Of course! While the focus of our app is to assist those with vision impairments, we welcome all and any users.

References

[1] Crawford, Susan. "The Challenge of Helping Blind People Navigate Indoors." Wired, June 25, 2019. <https://www.wired.com/story/challenge-helping-blind-people-navigate-indoors/>.