

POSEIDON

PersOnalized Smart Environments to increase Inclusion of people with DOWN's syNdrome

POSEIDON Route Creator app

User manual

App version: 1.20

This is a user manual for the POSEIDON Route Creator Android application, used to create routes for navigation. It will run on any Android device with Android version 4.0 and up, although the user interface is designed for phones.



The application is distributed via Google Play. Direct link:

<https://play.google.com/store/apps/details?id=no.tellu.poseidon.routecreator>

To find it by search in Google Play, use “poseidon tellu” to get a good match.

Make sure to enable automatic updates in Google Play, so that new versions of the application are installed automatically.

App permissions

The application needs access to some features of the Android device which are considered sensitive with regards to privacy. On modern versions of Android, the application needs to ask for permission to use these features, so that the user can allow or deny access (on older versions of Android, all permissions are granted by installing the app). Therefore, the application may ask for permissions when it starts. For full functionality, please allow each request. The application uses the following sensitive features:

- Camera: To take decision point pictures from the app.
- Location: For position in the map and for new decision points.
- Microphone: To record instructions for decision points.
- Storage: To store routes on the device.

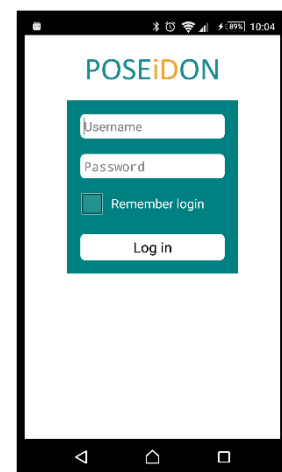
In addition to granting permission, make sure GPS positioning is enabled on the device.

Connecting to a POSEIDON account

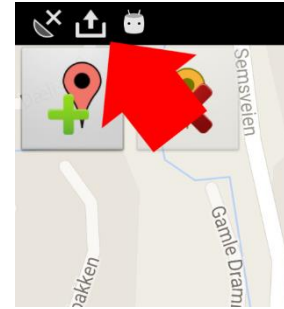
Use of the application requires a POSEIDON account. Routes are stored on the POSEIDON cloud storage also used by other POSEIDON applications, so that the same routes are available here, in the home navigation system and in the navigation application.

A starting screen for logging in is shown the first time the application is started. Enter your POSEIDON username and password. Tick “Remember login” to log in automatically the next time the application is started, bypassing this screen. The phone must be connected to the internet to connect to the POSEIDON service, but once it is running it can be used without a constant connection.

Once the application is connected to the POSEIDON service, it will show the main menu, which is a list of any existing routes as well as the option to create a new one. Should you ever need to disconnect from the account (to use the app with another account), press the button with the cog wheel (settings) and choose *Log out*.



The application downloads any existing routes, images and audio from the POSEIDON cloud storage when it is initially connected to the account (it may take a little time for all images to be available if you already have routes in your account before using the Route Creator). When editing a route, it will always try to synchronise any changes back to the cloud storage, so that new routes will be available in all applications. This requires an internet connection, but if one is not available at the time, it will keep trying. Whenever synchronisation of changes is in progress, an upload icon is shown in the notification bar at the top of the screen (see screenshot). If this icon does not go away shortly after the change to the route was made, it means the application is having trouble uploading to the cloud storage, probably because of a bad or missing internet connection. The icon will stay until all uploading is successful, retrying even if you leave the application. Note that you will not be able to edit another route until all changes have been synchronised. It is possible to shut down the application completely in the settings (*Turn off app*), but any changes not yet uploaded will then be lost.



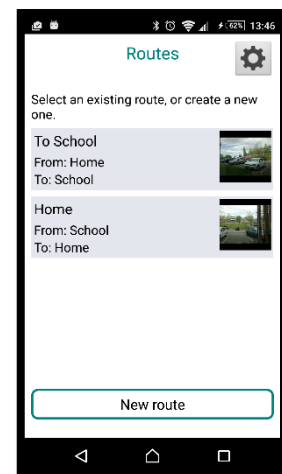
Working with routes

Once logged in, you will see a list of existing routes, and the option to create a new route. This screen also has access to settings (cog wheel in top right), where you can log out of the account.

Note that if you have made changes to a route which have not yet been uploaded to the POSEIDON cloud, this route will be marked orange in the list. You will not be able to edit another route while there are changes yet to be uploaded, but you can continue to work on this route.

Route information

A route is identified by a route name as well as names of the starting location and destination. Each route can also have an image, which is chosen from the decision points of the route. The route name and image is used to represent the route in lists. The user of the navigation app will have such a list to choose from if they want to manually start navigation.

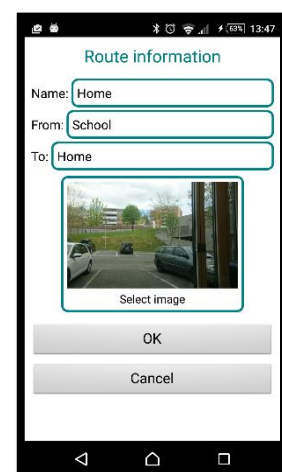


The names of the route, start and destination can be filled in when creating a new route. For selecting an image to represent the route, you must first add some decision points. You are then presented with the images of the decision points, and can choose one. The route information can be edited at any time. Start by filling in what you know when you first create the route, and then go back once the route is complete to set an image.

Route operations

Selecting an existing route from the list, and you have the following options:

- Edit information: The Route information screen described above.
- Edit route: Takes you to the map screen, where you can see the route on a map and set decision points.
- Make a copy: Creates a new route containing the same decision points as the selected route.
- Delete: Delete the route (you will be asked to confirm).

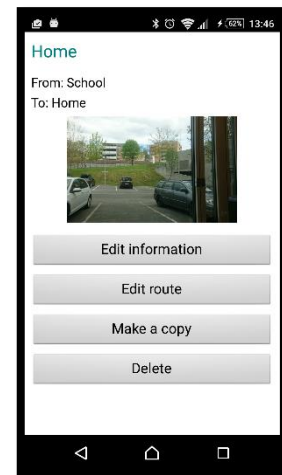


Route copy

The copy option is useful if you want to make a new route which reuses a part of an existing route. For instance, you may want to make several routes from home to the local bus stop, branching out from there. Or you may want to make a route returning home after making a route to a destination. In these cases, you can start with a copy of an existing route, and work from there.

Selecting to make a copy, you get two check boxes:

- Reverse direction: Tick this to reverse the order of the steps, to get a route running in the opposite direction. This is useful as a basis for a return route, but remember that all decision point instructions will need updating to match the new direction.
- Copy media: Tick this to include the images and recorded sound in the copy. When the new route is saved, the application will create copies of all media and upload them to the POSEIDON cloud storage.



You then need to give the new route a name, and start editing it. If you want to reuse the first part of the route you copied from, select the rest of the decision points and delete them. Add any new points and update the instructions.

Contents of a route

The purpose of a route is to aid someone in getting from A to B. To make a route that works well in navigation it is important to understand how the route will be used for providing the navigation. A route is defined by a series of decision points. Each decision point should give the user instructions needed to reach the next decision point (except for the last one, which should tell the user that the destination has been reached, and possibly say something about what to do next). Note that the route has a direction – a route from A to B can't be used to navigate from B to A.

The instructions come in the form of written text and/or recorded audio, and an image. The image should be a photo taken on the spot, in the direction the user should go next. It serves to indicate the direction to go as well as confirming to the user that they are in the right place. The audio recording should be a familiar voice explaining where to go next. If no audio recording is provided, the navigation application will read aloud the written text using synthetic speech. If an audio recording is provided, it is a good idea to provide a short written text to summarise the instruction, as this will be visible in the navigation application during and after the audio plays.

A decision point should be placed where there is a change in direction. The route will be drawn on maps as lines connecting the decision points, and the line between two points gives the general direction of travel between those points, so one is needed where there is an abrupt change in direction, such as taking a left or right at a junction. It is also a good idea to put a decision point at other places where a decision may be needed, such as to keep going straight at a big intersection, or to cross to the other side of the street.

You should be careful not to create too many decision points, both to keep the route creation process manageable and because there needs to be some distance between them. GPS accuracy has its limits, and the navigation may become confused if the wrong decision point is selected based on a GPS fix with low accuracy. A minimum distance of at least 30 meters is recommended between points, more if GPS coverage may be limited, such as between tall buildings. If there are several

decisions to be made in a short space, describe them all in one decision point. The application will warn you if you try to create points very close together or very far apart.

Comments so far pertains to providing instructions for walking. A route may also include public transport. A route can consist of multiple legs, with a leg being in either walking or transit mode. The distinction is important for the navigation, because transit mode is a passive mode where the user rides some form of transportation, and does not need to be warned when not going the right way. The Route Creator lets you specify a switch in mode when creating a decision point, and transit legs are drawn in a different colour.

A route typically starts with a walk leg, to get to a bus stop for instance. There will then be a decision point at the bus stop, saying what bus to take, and this is where we need to change to transit mode. At the destination point of the bus trip, there will be a decision point switching back to walk mode, if you want to provide further instructions. In between these, there can be additional decision points as part of the bus trip, if you want to provide instructions while on the bus, but note that these should be positioned approximately on the route of the bus, and the triggering of these instructions in navigation depends on GPS coverage being available. For above-ground public transport, it is recommended to put in one decision point reached a short time before the destination, to instruct the user to disembark at the next stop. Such a decision point can be positioned by using the map, and the image could for instance show something to look out for when approaching the stop.

Editing the route

When working on the route, it is shown on a map. The map view has buttons for editing the route at the top and map controls at the bottom. The editing and map control functions are shown below.



A route is defined by a series of decision points, each represented by a red marker on the map, connected by lines. You can place decision points either by being at the desired location, or by touching the map in the desired location. You don't need to be on location to edit a route, just remember that you should have a photo of the location when creating a new decision point.

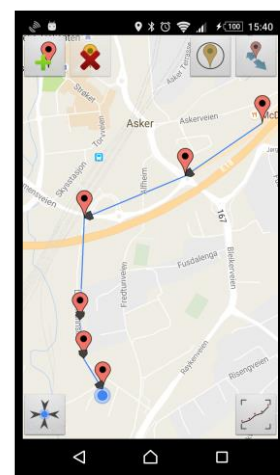
Map

In addition to the route, the map shows your current position as a blue dot (the accuracy of positioning depends on satellite positioning not being disabled in the phone, and being in view of satellites). The map can be dragged around with a finger, and zoomed in and out using two fingers.

There are two map controls in the bottom corners of the view. The left one zooms in and centres on the current position. The right one zooms and moves the map to exactly match the borders of the route.

Creating decision points

Press the *add* button (top right) to create a new decision point, to be added at the end of any current route. For positioning the point, you are given the choice between using the current position (only available if the phone currently has a GPS fix) or by touching the map. You also have the



option to change to transit mode, or back to walk mode if the last point was in transit mode. You are then taken to the decision point screen, to provide the instructions. Touching an existing decision point on the map will also bring up the decision point screen for that point, to review or edit the instructions.

In the decision point screen you specify the image, audio and text for the point. To set an image, you press the image field. You are given a choice between *Camera* and *Image files*. *Camera* launches a camera screen. The camera screen has a single button to capture an image. Note that images must be in landscape mode, so you must lay the phone on its side to capture the image – hold the phone so that the text on the button has the correct orientation (make sure you have not locked the screen orientation). *Image files* launches an image browser on your device, giving you access to available images. You could for instance take photos with your device, without using the Route Creator, and later select from these photos when creating a route. You can create decision points without images, but keep in mind that some use of the routes, such as in the Home Navigation training, may require images.



For audio instruction, press the microphone button to start recording (this uses the phone's microphone). Press it again to stop (it is a stop button while recording). You can also play back the current instruction, and delete it (the rubbish bin button).

Write the text instruction in the text field. The decision point is created or updated when you press OK, storing the change.

Deleting and inserting points

The decision point screen, shown when touching a point on the map, has an option to delete the point. To delete multiple points, use the selection mode.

Pressing the selection mode button on the top right lets you select decision points instead of editing them when you press them. This allows two operations: deleting selection points and inserting a point between existing points.

To delete points, select one or more points and press the *delete* button.

To insert a point, you need to select a single point. Then press the *add* button, and you will be asked if you want to insert the point before or after the selected point. You then touch the map to position the new point.

Moving decision points

The final button, in the top right corner, toggles a move mode. In this mode you can press and drag decision points to move them around the map. Press the *move* button again to save the changes. The other buttons are disabled while move mode is on.