User guide for KNFB Reader Android app.

KNFB Reader, LLC.
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http://www.KNFBReader.com

Learning the power of your reader.

Welcome to the world of rapid efficient text recognition and reading with our life changing KNFB Reader Android app. This Guide will help you learn to use the KNFB Reader app on your smartphone. The KNFB Reader app will enable you to read most printed documents within seconds after taking a picture.

What the KNFB Reader Can Do.

The KNFB Reader app - can read a wide variety of document types you may encounter throughout the day. It performs particularly well for reading printed memos, reports, fliers, and virtually any other kind of document typically printed from a personal computer. It will also read many professionally printed items of various sizes, colors, and styles, including:

- Books
- Magazines
- Most restaurant menus
- Utility bills
- Printed mailing addresses
- Class or conference handouts
- Hotel bills
- Printed receipts
- Airline boarding passes

- Labels on packaged foods showing contents and nutrition information
- Transit brochures and schedules
- CD labels

What the KNFB Reader Cannot Do.

The KNFB Reader Android app has been developed to recognize and process a wide variety of type styles, printing formats, and lighting conditions. However, as computer software, the app is not quite as adaptable as the human brain.

You can expect some printed matter to be read accurately with very high reliability, but in other instances performance with a particular type of print or item may not meet your need. In general you should give the KNFB Reader app a try with things you need to read. This will help you to learn best what to expect.

The KNFB Reader app is not designed for use with handwriting or scrolling text on a screen or sign. Accuracy for household product containers (food boxes, tea bags, milk containers, detergent bottles, etc.) may vary, especially if the written information on these containers is artistically presented or is surrounded by pictures and graphics.

Other circumstances that may decrease accuracy include:

- text printed on cylinders with warped or incomplete images (such as soup cans or medicine bottles)
- LED and LCD screens with refreshing text (such as digital clocks, computer screens, and cell phone screens)
- vending machine buttons and instructions
- engraved print (such as serial numbers) on machines
- very large printed text
- posted signs such as signs on transit vehicles and signs in shop windows
- conventional, analog clocks

Factors Affecting Accuracy.

As with human vision, performance of the KNFB Reader app will vary depending on several factors, including:

- surface reflection and glare
- distance between the camera and the target text
- text size and variation
- text layout
- curvature of the target text
- wrinkles and creases
- background images and colors
- ambient lighting
- shadows
- obstructions (such as cords, fingers, or neckties) between the camera and the target text

Except for obstructed images, the app can generally adjust to a normal amount of variability with each of these factors. Nonetheless, some attention should be given to minimize the impact of any of these variables when getting ready to take a picture.

Take a picture, display and read text.

When the KNFBReader app first starts up, you will be in the Image Capture screen with Talkback focus on the Take Picture button. With the screen of the device facing up, place your Android device down with the camera in the center of the document with the device in the same orientation as the document--portrait orientation is recommended--and lift the device straight up to an appropriate distance.

Held in this position, the camera is on the underside of the device. (Check your camera periodically to make sure that the lens is clean and unobstructed). Be sure to hold the device so no portion of a finger or your hand is close enough to the camera to block the view of the document.

To take a picture touch the left side of the screen, and Talkback should say: "take picture." Then you can gently double tap anywhere on the left-hand side of the screen and the camera will respond with the distinctive sound of the shutter.

For best results, to avoid jiggling the phone while the picture is taken, try using a one finger with a double tap and hold gesture, then lift your finger to activate the camera. Hold the device steady until you hear the camera shutter sound.

As soon as the camera snaps the picture, the image is processed automatically to recognize the text. If any is found, the text is displayed automatically and read aloud as the Text Navigation screen opens. To pause or resume reading, touch the read/pause button in the center of the screen near the bottom and just above the home button on most devices.

To save the document, locate and double tap the Save Document button found just above the recognized text in the right-hand corner of the screen. To return to the Image Capture screen for taking another picture, touch the Back button on your device, often located immediately to the right of the home button at the bottom of the screen.

Picture-taking tips.

Sharp pictures are essential for optimal performance. Hold the device steady by using both hands and brace your elbows on the reading surface, while still keeping the device far enough from the document to capture all the text. For best results, place the text you want to read on a flat surface in front of you. Flatten the document as much as possible. Keep the device level over the page. Fill the screen with the view of the document you want to capture.

To confirm your camera position or learn the feel of a well lined up picture, use the Field of View Report option. You can activate the Field of View Report by double tapping or using the double tap and hold gesture on the right-hand side of the screen then gently lifting your finger as you hold the device still to listen to the report; you can then adjust the position of the device above the page and repeat the process as needed. The goal is to have the device close to the

document but still far enough away that all four edges of the document are seen by the camera.

Practice will help in the beginning. Use a familiar document printed in clear type on an 8 and one half by 11 inch (letter format) or 21 by 29.7 cm (A4 format) white sheet of paper for your initial practice sessions. Place the document on a flat surface having a plain dark, not shiny background. After some practice with aiming and taking pictures you will begin to know how the KNFB Reader app responds. You will also be better prepared to analyze and correct conditions you can control when performance does not measure up. A little practice and persistence can greatly improve performance.

Navigation basics.

This guide will instruct you on navigating the KNFB Reader app on your android device using the Google talkback built-in gesture-based screenreader. This document assumes that the user has basic knowledge of how to navigate using Talkback and does not serve as a replacement for Talkback training.

Image Capture screen.

The KNFB Reader app opens to the Image Capture screen but several other screens are also used for reading text and performing other functions in the app. Think of the image capture screen as the home screen for the app. To activate a control or to change a setting, with Talkback enabled, double tap with one finger or use a one finger tap and hold gesture for best results when taking pictures. The next few sections will discuss using the controls on the image capture screen in greater detail.

Screen layout.

When the KNFB Reader app is launched for the first time, the Talkback focus will be on the "Take Picture" button. The controls on this screen going from left to right, and top to bottom in Talkback swipe order are as follows.

- File Explorer
- Settings
- Camera Flash
- Tilt Guidance
- Take Picture
- Field of View Report
- Buy unlimited version (only when still in trial mode)
- Add picture from library
- Batch Mode
- OCR Language
- Document Type
- picture mode

File Explorer—on Image Capture screen in the upper right-hand corner.

The "File Explorer" screen is where your saved files are located. Double tap on the "File Explorer" button to access the File Explorer screen. Activate the back button to return to the previous screen. Files are listed by date with the newest file appearing first and the oldest appearing last in the list. Use talkback actions or double tap the edit button to access additional file management related actions including export options, renaming, and deleting saved documents.

PDF and image files.

PDF and jpg files may be imported in to the KNFB Reader app for text processing using the open with function. This means if you have an image-based pdf or jpg file you know contains text, importing the file into the KNFB Reader app will let you to rapidly process the file and extract any text and have the contents read aloud and available in Braille.

Here is a sample workflow for extracting text from a pdf or jpg file.

- Navigate to a pdf or jpg email attachment
- Using the share option, open the file in the KNFB Reader app
- Double tap on the imported file and activate the scan button to extract text to be read aloud.

Settings button—located on Image Capture and Reader screen swiping right from File Explorer.

The settings screen consists of three tabs with various controls for changing the way the app functions. Accessing specific settings in any of the tabs may be accomplished by double tapping on the desired tab to select it. To exit settings and return to the image capture screen, use the back button

Moving from left to right, the tabs on the settings screen are as follows.

- General tab
- Text tab
- About tab

General Tab

The general tab is divided into Camera, Reader, File Manager and Dropbox backup settings.

The Camera **settings include:** switch flashlight to always on or always off, landscape mode for Field of view report, and a button to select OCR languages. Double tapping this button opens a new screen with options to select or deselect the OCR languages you want KNFB Reader to offer when you open the OCR-language picker on the image capture screen.

The flashlight setting, when enabled, will turn on the LED light located next to the back camera, which you can use as a light source for taking pictures in the dark or in low-light conditions. Please keep in mind that when the flashlight is enabled for long periods of time, the battery may drain faster.

Reader **settings include check boxes to** Automatically start reading when the picture is taken and the reading screen opens, Allow reading in background, for

example when the KNFB Reader app is closed, Allow word highlighting for visual readers to follow the spoken text, and a select reading languages button.

The Automatically start reading button determines whether or not text will be read immediately after the image is captured and text is available. This setting is enabled by default. Disabling it will cause the KNFB Reader app to seem slower since the page needs to fully process before text can be read with Talkback.

The Allow reading in background toggle determines whether or not speech stops when switching the app to standby.

The select reading languages button opens a screen where you can choose which languages the reading languages you want KNFB Reader to offer you in the Document language picker on the Reading screen. If you find a more info label next to a language you want to select, then you have a choice between two or more variants of that language, for instance US and UK English. Tapping the more info label will open a new screen where you can make your choice between the language variants.

The File **Explorer** settings has a checkbox where you can choose to receive a confirmation pop-up message asking for confirmation whenever you want toto delete a file.

In the Dropbox Backup settings you will find a checkbox labelled Link to Dropbox. Switching this to ON opens a Dropbox dialog prompting you to allow access by the KNFB Reader app to the files and folders in your Dropbox. Allow access to the dropbox account shown or select another Dropbox account for backup.

Once you have allowed access to the Dropbox account, all KNFB files are saved to a Dropbox folder named KNFB. You will find this folder in the root of your Dropbox directory.As long as KNFB Reader is linked to your dropbox account, the KNFB files in your Dropbox account will be synchronized with the KNFB files on your device. If for instance you add a page to a document, then that page will also be added to the document in the Dropbox folder as well. Once linked to your KNFB Reader you can use the Dropbox folder to retrieve individual files. To

do this you open your Dropbox app, go to the KNFB folderand go to the file you want to retrieve. Select open in KNFB Reader to retrieve the actual file. If you delete a file on your device, then it will not be deleted in the Dropbox folder, so it is still there for later use.

Once you have allowed access to the Dropbox account you will also find two more buttons, one to ackup all KNFB files to Dropbox and the other to Restore all KNFB files from Dropbox.

After tapping the button to backup all KNFB files to Dropbox a zip archive folder containing all KNFB files on your device is saved in the KNFB folder in your Dropbox directory.

The restore feature can be used to place all files back from dropbox to your device. To do this, double tap on the button Restore all KNFB files from Dropbox. Keep in mind however that when files are restored from dropbox, all of your current KNFB files on your device not backed up to dropbox will be deleted and replaced by the files in the backup from Dropbox.

Text Tab.

In the text tab you will find options to change text settings and highlight settings.

Text settings include

- Font type
- Font size
- Text color
- Text Background color
- Line distance

Highlight settings include

- Highlight text color
- Highlight background color

About tab.

The About tab is where the app version, copyright information, acknowledgements and restoring the manuals may be located.

Camera Flash—on Image Capture screen swiping right from Settings.

To take the perfect picture for optimal text reading results, it is important to have an adequate lighting environment. The camera flash control located on the image capture screen can be cycled between three settings: automatic, on, and off with always on set as the default. The automatic flash setting utilizes the light sensor on the camera to determine whether additional lighting is necessary and triggers the LED flash when the reading environment is too dark. Cycling between flash modes may provide better text results depending on the material of the document being captured. As an example, there may be instances where disabling the flash may provide better text results from a glossy brochure or computer monitor.

Tilt Guidance—on Image Capture screen swiping right from Camera Flash.

The tilt guidance setting is an alignment tool that can be toggled on and off to provide vibration feedback on whether the camera is being held level over a document. When this setting is enabled, your device will vibrate in image capture mode when the device is tilted to the left or right and to the front or back. The vibration pattern pulsates when the device is not level to a desk or table. Rapid pulsing indicates more tilt right to left or front to back, and slower pulsing indicates less tilt. No pulsing means the device is held level (horizontally or vertically).

Take Picture button—on Image Capture screen swiping right from Tilt Guidance.

The Take Picture button can be found by swiping right from the Camera Flash control or by touching anywhere on the left-hand portion of the screen and then using a double tap or double tap and hold with one finger gesture to take the picture when you then lift your finger. The KNFB Reader app has been designed to make it simple to capture images quickly and efficiently. As mentioned earlier in this guide, the best images for extracting text have all four edges in the field of view of the camera. The most efficient method for accomplishing this is to lay the device in the center of the document and raise it straight up to an appropriate distance before taking the picture. The device can be held in landscape or portrait position relative to the document, but remember that the camera is located on the underside of the device so avoid covering it with your hand or finger.

Field of view report—on Image Capture screen swiping right from Take Picture.

The Field of View Report button can be found by swiping right from the Take Picture control or by touching anywhere on the right-hand portion of the screen and then using a double tap or split tap to activate the report. The field of view report is available to help in learning how best to align the camera with the document you want to read.

Use the field of view report button to have the KNFB Reader app capture an image and announce the position of your camera relative to the document. Similar to capturing an image for text reading, the camera should be centered over the print material at an appropriate distance in order to have all four edges visible in the picture. An optimal field of view report is all four edges are visible, rotated zero degrees clockwise. This means that the entire document is visible in the frame and no text will be cut off. Practicing with the field of view report will help with getting a feel for how the camera sees various document sizes and works in different lighting conditions.

Buy Unlimited version - on Image Capture screen swiping right from Field of View Report.

This button is only displayed when you are still using KNFB Reader in trial mode. Activate this button when you want to buy the full version of the app.

Add Picture from Library —on Image Capture screen swiping right from Field of View Report or Buy Unlimited Version

This button opens the photo library on your device and allows you to select a photo. Selecting a photo opens the Recognize Imported Image screen displaying three buttons: Recognize Image, OCR-language, and Document Type. The purpose of the OCR-language button and the Document type button is the same as on the Take Picture screen. Use the Recognize Image button to OCR the photo you have selected.

Batch Mode—on Image Capture screen swiping right from Add Picture from library.

Using batch mode is one means to capture, process, and read multipage documents as a single file. To enable batch mode, double tap the batch mode button to toggle the setting on. Once batch mode has been enabled, use the take picture button to capture each page of the document. When all pages have been captured, activate the batch mode control to process the images for text. Announcements will be made after each image has been successfully processed. The text will be read aloud once the last image has been processed.

Set Language—on Image Capture screen swiping right from Batch Mode.

The KNFB Reader ap is able to recognize and read printed materials in several languages including:

- English,
- French,
- German,
- Dutch,
- Italian,
- Spanish,

- Swedish,
- Norwegian,
- Portuguese,
- Danish,
- Finnish,
- Turkish,
- Polish.

To select an alternative text recognition language, double tap the OCR language button and use the language picker to select the desired language and double tap the done button to return to the image capture screen. Please note that you can limit the number of languages shown in the picker in settings.

Select Document Type—on Image Capture screen swiping right from OCR Language.

The KNFB Reader can recognize two distinct document types. The default type is Multi Column, which recognizes single or multi column page layouts and reads the print in the intended order. Switch the document type to Single Column for documents with information in one column relating to information in the next column beside it, such as invoices, where item and price are meant to be read together. The document type options may be selected or changed by activating the document type control, selecting the desired item in the picker, and double tapping the done button to return to the image capture screen.

Select Picture Mode—on Image Capture screen swiping right from Document Type.

The KNFB Reader app provides three modes you can use to take pictures for text recognition. Use the manual profile to take pictures with the TalkBack gestures. Use the automatic profile when you want the KNFB Reader to take pictures automatically when the document you want to read is properly lined up and text is detected in the frame. Use the Stand picture mode when you want to place your device on a stand while leaving your hands free to place documents in view of the camera and turn pages.

In automatic picture mode, the device should be centered on the document and lifted to the adequate height. Once text is detected and all four edges are in the frame, the picture will be taken and any available text will be read aloud.

In stand picture mode the KNFB Reader app will take a picture automatically when no movement is seen by the camera and text is detected. For best results a stand with lights for the viewing area should be used. The typical workflow when using a stand is: Double-tap the Select Picture Mode button. Choose Document stand in the profile picker. Then, if the device is not already placed on the stand, the app will prompt you to do so and then press ok when the camera is pointing at the empty reading surface. Make sure there is no document in the stand, so the app can properly calibrate before you press ok. the reader is ready for use on the stand

When the camera detects that a document is being placed in the viewing area the reader will begin beeping to indicate that movement and text are being seen. these beeps then stop when no movement is seen and the camera will snap the picture automatically.

Switching KNFB Reader to batch mode while using a stand is especially useful for capturing and reading multi-page documents such as magazines and books. With batch mode switched on and your device placed on a stand, approximately 12 inches from the reading surface you can then place pages in the camera viewing area while the picture is taken automatically. Note that automatic text detection from a stand also works when flipping pages of a multi-page document placed in view of the camera as well, but be sure to hold pages down at the edge so as not to block the camera from seeing all of the text.

Reading and Text Navigation Screen.

This screen is used to display and read text, highlighting each word as it is spoken. You can also navigate through the text, view or change settings relevant to text, spell words, reprocess the image, or save files. To get to this screen you must take a picture in which text is recognized, or by opening a file in File Explorer.

Screen layout.

The Reading and text navigation screen has several controls located above and below the document text. The controls on this screen going from left to right above and below the text in Talkback swipe order are as follows.

- Settings
- Show Picture Associated with the Selected Page
- Add Page to Document
- Recognize this page again
- Save Document
- Navigation and Play/Pause Controls
- Choose TTS Language
- Choose TTS Speech Rate

Settings— in the upper right-hand corner on reading screen

Opening the settings screen displays the same options already discussed in Settings from the Image Capture screen, noting especially the adjustments for text font, text size, text color, background color, and distance between lines. Highlight adjustments include highlight text color and highlight background color.

Show picture associated with page—above text on reading screen swiping right from settings.

Activating this control will display the original captured image. press the back button to return to the text navigation-reading screen.

Add page to document—above text on Reading screen swiping right from show picture associated with page.

Double tap this button if you have a multi-page document and you want all pages to be saved together in a single file. Note that you will be prompted to save the first page of a multi-page document by selecting the file name you want or just accepting the default. Then, after the first page is saved, you will be returned to the image capture screen to take the picture and add the second

and successive pages by pressing the add page button on the reading screen each time. In this way you can continue to add pages to create a single document, but to end the process the entire file must be saved again after you have added the final page.

Recognize this page again — above text on Reading screen swiping right from Add Page.

Activate this control to reprocess and read the latest image captured in a different text detection language or in the opposite document type, for example Single Column instead of Multi Column.

Save document—above text on Reading screen swiping right from Recognize this page again.

The text displayed on the Reading screen after you have taken a picture will be discarded unless you activate the save option before leaving that screen. Activating the save document button will display a dialog with a text entry field for the file name prefilled with the date and time. Text may be modified in the entry field for a file name you are more likely to recall. Double tap the save button to confirm the process and place the file in file explorer reachable from the image capture screen.

Choose TTS language — below Navigation and Play. Pause Controls on Reading screen swiping right after Next Page button.

Activating this control displays a language picker where an alternative language for the reading voice can be selected. Swipe right and then double tap done to close the language picker. Please note that you can limit the number of shown languages on the picker in settings.

Choose TTS speech rate — below Navigation and Play. Pause Controls on Reading screen swiping right from choose TTS language.

This setting controls the speed at which the Reader reads text. The possible values range from 0 percent to 100 percent. Double tapping this control will display plus and minus buttons for selecting the desired speech rate value.

Navigation and Play/Pause Controls — below text on Reading screen from left to right at bottom.

The TTS—text-to-speech—controls include previous page, Previous sentence, read/pause, next sentence, and next page. These buttons function similar to Daisy player controls for navigating through the recognized text.

Getting help.

Learning from others is perhaps the best way to master use of the KNFB Reader app. An email list to help you do this is maintained by the National Federation of the Blind.

To subscribe, go to http://www.nfbnet.org/mailman/listinfo/reader-users_nfbnet.org

Or, send an email to reader-users-request@nfbnet.org and put the word "subscribe" in the subject field.

If you still have questions after you have studied this manual and consulted the user list, please email a request for assistance to: support@knfbreader.com

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