AI-Powered Mobile Assistive Technology Apps

# Mobile App: Envision

# This app uses your camera and AI to scan, read and describe items in your environment.

# Part 1: Introduction

## Setting up the app

1. Go to the App store or Google Play and install [Envision](https://www.letsenvision.com/) on a mobile device
2. Complete tutorial provided in app

## Try out the app

## Complete three or more of the Envision functions. The functions can be changed by selecting one of the 3 large blue icons at the bottom of the screen. Further functions can be found by selecting from the small icons along the bottom i.e. Text, General, Scan & Find).

## Text should be selected by default

## Go to the Help menu to adjust speech output and other settings

## You may try using this app at home or in the community

## Think about the app

* Complete the worksheet below as you complete the tasks

## Support for the app

* If you have any issues or questions regarding this activity, contact We Count research assistant, Ali Kazmi at **akazmi@faculty.ocadu.ca**

## Worksheet

### App Tasks

The following table includes a checklist of nine possible functions that can be completed with this app and suggested tasks

for each function. Choose three or more of the following app functions and check off the Task Completed column. As you

use the app, think about where AI is used and how data is handled and collected.

| **App Functions**  | **Task Instructions and Suggestions** | **Task completed** |
| --- | --- | --- |
| **Instant Text** | * Make sure Text is selected in the lower menu with small icons, then choose Instant Text from the large icons
* Point phone camera on items around your home that have short amounts of text
* Examples include text on canned foods, medication, ingredient labels, nutrition labels, receipts, paper mail, playing cards, cards in your wallet, appliances (microwave, stove), thermostat, etc.)
* Try reading things that have different fonts, different colours, printed on flat vs curved surfaces, holding with other hand vs placed on table
 |[ ]
| **Document Text** | * Make sure Text is selected in the lower menu with small icons, then choose Document Text from the large icons
* Point the camera on a full page of text and follow the audio cues to complete a scan
* Examples include a page in book, magazine, instruction manual, website on a computer screen, utility bill, menu
* Try scanning text of different sizes, colours, contrast, mixture of text and graphics, in different lighting environments, indoors vs outdoors, and placing the paper on a darker, lighter, plain, or busy background
 |[ ]
| **More actions** | * Make sure Text is selected in the lower menu with small icons, then choose More Actions from the large icons
* Choose to import an image of text that is saved on your phone (in your photos) or choose to import a PDF that was previously viewed on your phone
* Try taking photos of different texts or opening up different PDF files (i.e. electronic receipts, e-mail attachments, saved news articles, saved e-books)
 |[ ]
| **Describe Scene** | * Make sure General is selected in the lower menu with small icons, then choose Describe Scene from the large icons
* Point camera as if you were taking a scenic picture, then take a photo using the Describe Scene button
* Take pictures in various locations indoors and outdoors and with different lighting conditions and varying levels of activity
 |[ ]
| **Detect Colours** | * Make sure General is selected in the lower menu with small icons, then choose Detect Colours from the large icons
* Point the camera at various items of clothing you are wearing or walk around your living space and point the camera at different colours
* Try the 30 vs 950 colour detection option by going into the Help menu and then Colour Detection
 |[ ]
| **Scan Barcode** | * Make sure General is selected in the lower menu with small icons, then choose Scan Barcode from the large icons
* Point the camera to common grocery or household items with working bar codes
* Try scanning a variety of items with bar codes in different locations and surfaces types such as milk carton, bag of carrots, canned goods, over the counter meds, cosmetics, etc.
 |[ ]
| **Find People** | * Make sure Scan & Find is selected in the lower menu with small icons, then choose Find People from the large icons
* When you are with other people, move the camera around the room when the feature is on and the sound indicates if another person is in the room
* If you wish to personalize the feature, use the Teach Envision option
 | ☐ |
| **Find Objects** | * Make sure Scan & Find is selected in the lower menu with small icons, then choose Find Objects from the large icons. Choose the object from the list that you want identified. For example, after you choose ‘cup’, move your phone to a cup and there should be an audio signal indicating a cup has been found. Tap on Find Objects to look for a different object.
* Try approaching the object from different angles, open or closed, or different variation of the same object (i.e. glass cup, paper cup, mug)
 |[ ]
| **Teach Envision** | * Make sure Scan & Find is selected in the lower menu with small icons, then choose Teach Envision from the large icons, select Teach a Face and follow the instructions to save a person
* Try taking photos of the person from different angles, with different facial expressions, and from photos. Train the app with 5 pictures of the same photo or 5 different photos.
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### App Questions

Think about how AI and data is used in this app. You may use the following table of 10 questions to guide and record your reflections. Consider as many questions as you wish.

| **Reflecting on the App** |
| --- |
| Does the app function as intended? |
| Are there any unintended benefits in using this app?  |
| Would this app benefit those outside the intended market? |
| What type of user data and information is collected to be able to use this app? Do you share data as you use this app? |
| Are users able to make changes to the app or provide feedback to the developers? |
| Do you feel the use of AI and data collected in this app improves the independence and quality of life for persons with disabilities? |
| Do you feel the use of AI and data collected is necessary?  |
| Are there any ethical and fairness concerns with how AI or data is being used in this app? |
| Does the use of AI and data collected in these and other apps have a negative impact on persons with disabilities or hamper efforts to inclusion? |
| Do you have any other comments on the impacts of AI and data collected? |

# **Part 2: Exploration of Artificial Intelligence through Assistive Technologies**

## **Short Answer Questions**

Based on your experience with the app and activity, please answer the questions below.

1. How can these apps improve the quality of life for people with disabilities and support independent living?
2. How would this impact society in the way that we live, work, interact with people? How would it promote or detract from values inclusion and equality?
3. What are the risks and benefits that this type of technology would have on society and excluded groups? Are the apps “fair” in their collection of information and payment structures or are they exploitative? What are good approaches for AI and AT Apps?
4. Does the AI/AT meet diverse needs of the community it was designed for? Is it biased in its understanding of the target community and its needs?

### **Addressing Impacts**

From the CBC podcast: “*Science and technology has progressed faster than policy, and the ability for humans to keep up with ramifications. There are risks involved but we have to mitigate them as we develop this technology*.” says Roger Melko.

1. What role do governments, organizations, and citizens have in understanding these ramifications and contributing to risk mitigation policies?