Exercise 2

The dataset I brought to class was 50 photos of my halloween pumpkin hat, 50 photos of my computer mouse and 50 photos of random objects around the CLAB. I chose the pumpkin hat because it was on theme with halloween, and Sabine told me to. My mouse is an object that I carry around with me in my bag almost everyday.

The purpose of the task was to train an machine learning mode in Edge Impulse to recognize two distinct objects. The steps I took to do this were as follows; create a new project, upload and label data, create impulse, check parameters, check data, transfer learning, train model,

use model. The data set overall did pretty well with only one images not be recognized. This was due to the image of the hat being from the inside out, so it was different then every other photo.
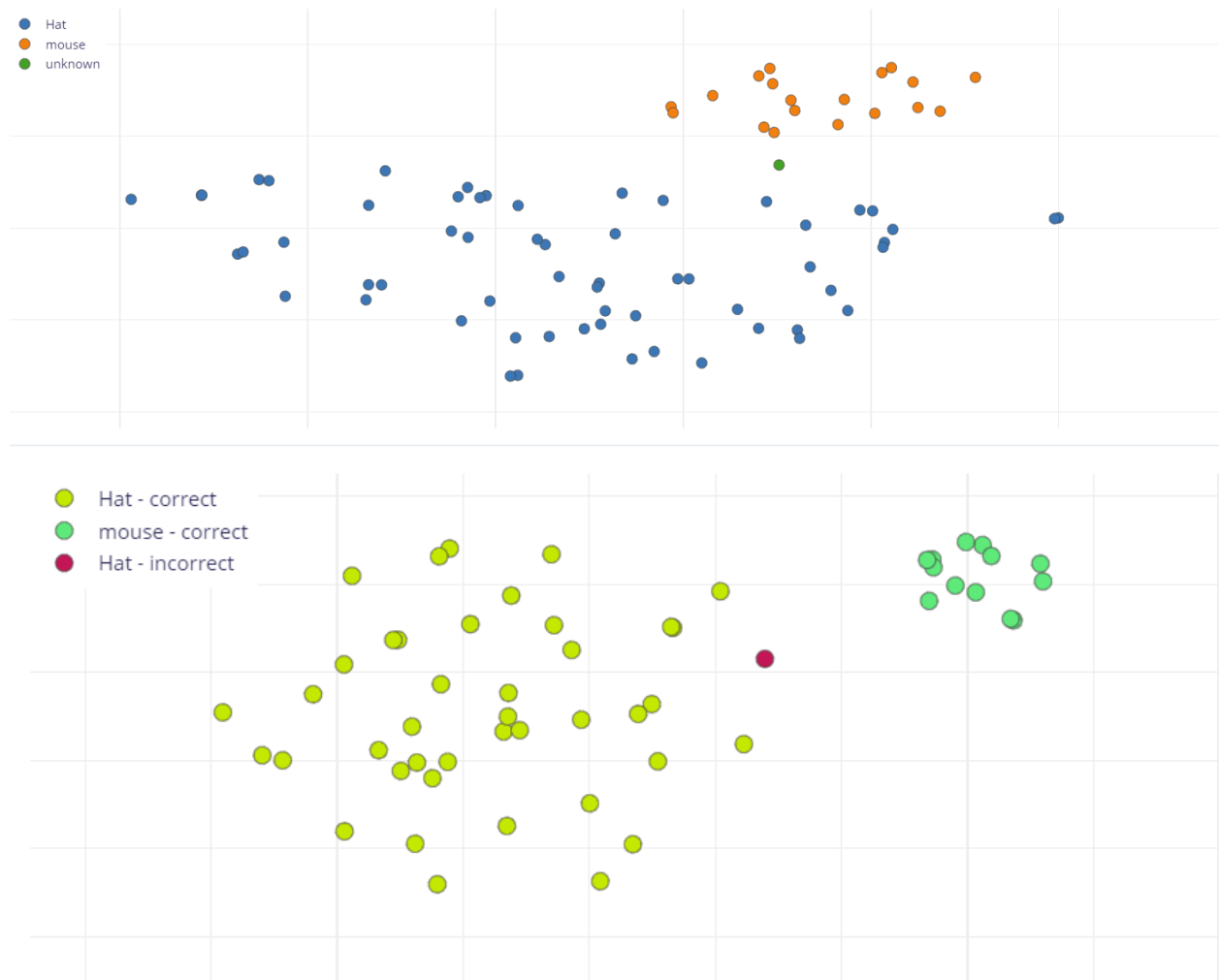
The graphs show that the data was recgonized pretty well, with only that one photo being an unknown. The first graph doesnt recognize the images where the seconds one recognizes that it got the image incorrect.

The way I would get the model to perform better is to probably take out that unknown photo, in this case better would mean have a 100% accuracy rate.

With the next model I added the 50 random objects as well as my previous objects in to see how well it can classify. The purpose of this task was to really put the model to the task and see how it sees random objects with only one photo. I was pretty surprised by how well the model still did, it recognized a lot of random objects as "Other", thought it did not have a 100%

accuracy and did incorrectly guess two objects as "hat"

ACCURACY
93.55%

	HAT	OTHER	MOUSE	UNKNOWN	UNCERTAIN
HAT	100%	0%	0%	0%	0%
OTHER	25%	75%	0%	0%	0%
MOUSE	0%	0%	100%	0%	0%
UNKNOWN	-	-	-	-	-
F1 SCORE	0.94	0.86	1.00	0.00	

Feature explorer ⑦

- ● Hat - correct
- ● Other - correct
- ● mouse - correct
- ● Other - incorrect
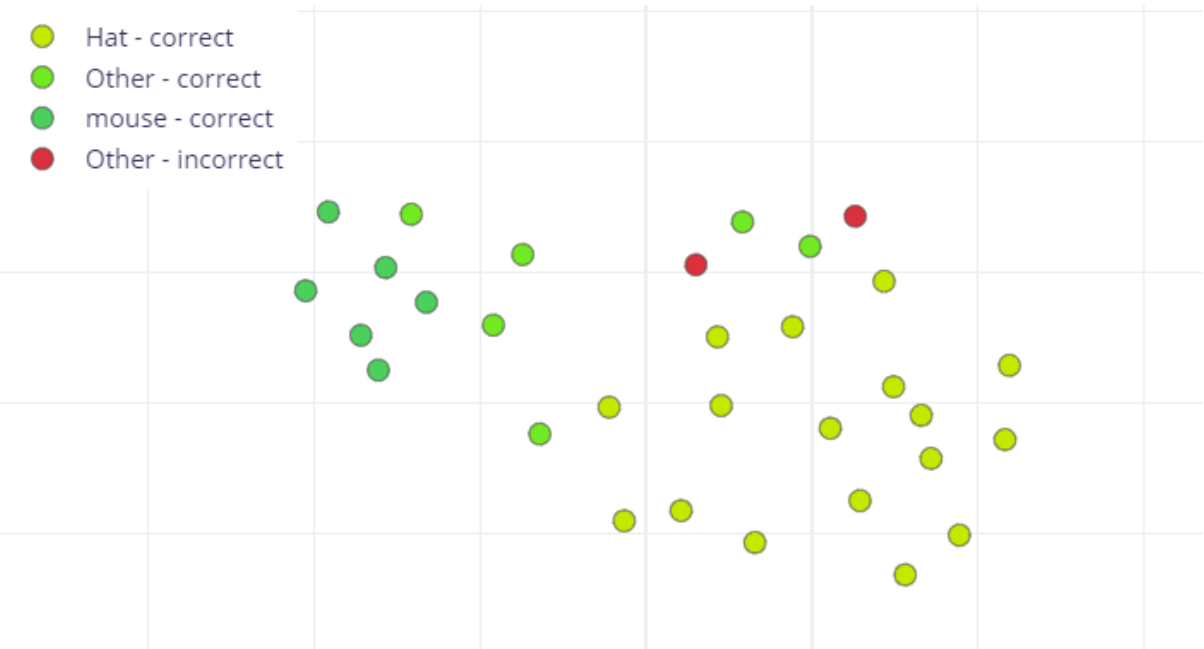

This does not surprise me as it is hard to classify objects that only have one image and no connection to the other photos handed in under the same label. It did theoretically perform better since it didn't get any of the objects (Hat, mouse) wrong, only the other category. It's interesting that when I added more variables it recognized the main objects easier.

Part C:

I see a lot of uses especially if it were real time object detection. For example, it could be super helpful to visually impaired people. You could have a ML model embedded in a pair of glasses then can recognize objects and give a description to the person. It could alert them to things in they're path and provide an aid to them without relying on anyone else.
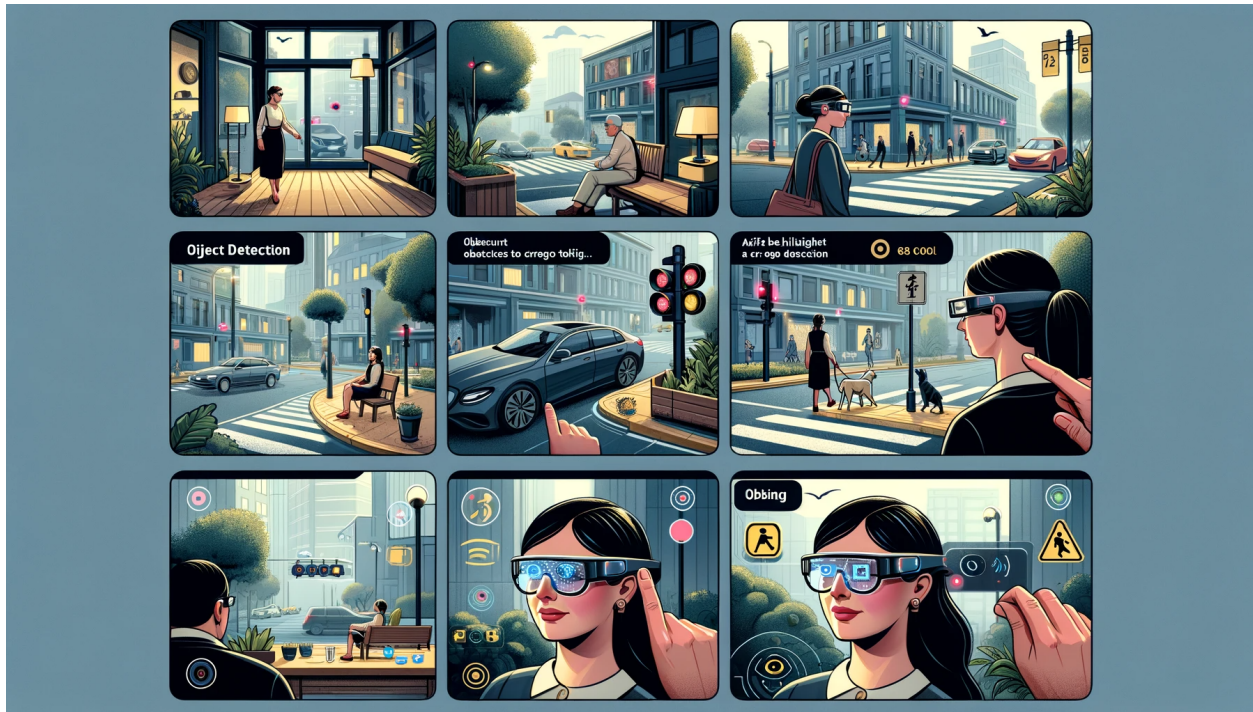
(Generated with ChatGPT, Storyboard for Assistance for Visually Impaired Individuals using Object Detection Technology: 1. Frame 1: Inside an apartment, a visually impaired woman, Maria, is putting on a pair of high-tech smart glasses. The glasses are sleek, modern, and have a small camera on the frame. 2. Frame 2: Maria steps outside onto a busy urban street. The smart glasses, using object detection, visually highlight obstacles like street signs, potholes, and pedestrians in her path. A small display inside the glasses shows these highlighted objects. 3. Frame 3: Maria approaches a busy intersection. The glasses alert her to a red light and a crosswalk ahead through an auditory signal. The street scene is busy with cars and people. 4. Frame 4: In a park, Maria is sitting on a bench. A dog approaches, and the glasses identify the dog and inform Maria through an audio description, enhancing her social interaction. 5. Frame 5: Back at home, Maria removes the glasses and looks relieved and confident. The room has a simple, cozy decor, and there's a sense of accomplishment in her expression)