Scene Analysis for Visually Impaired

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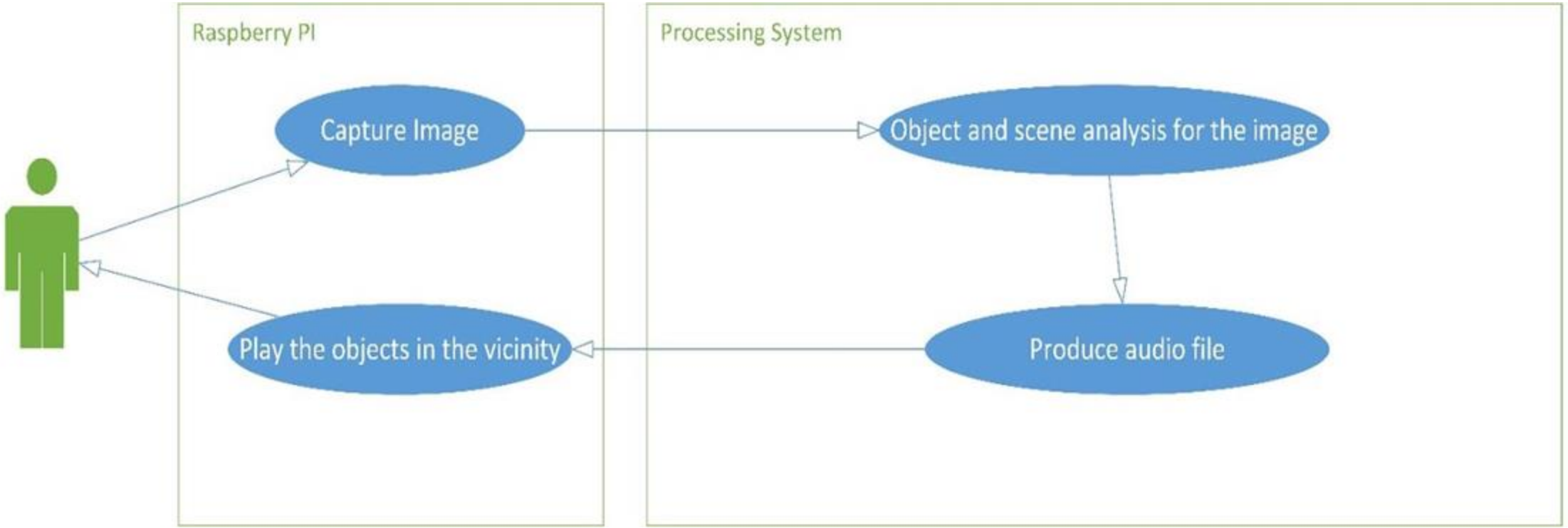
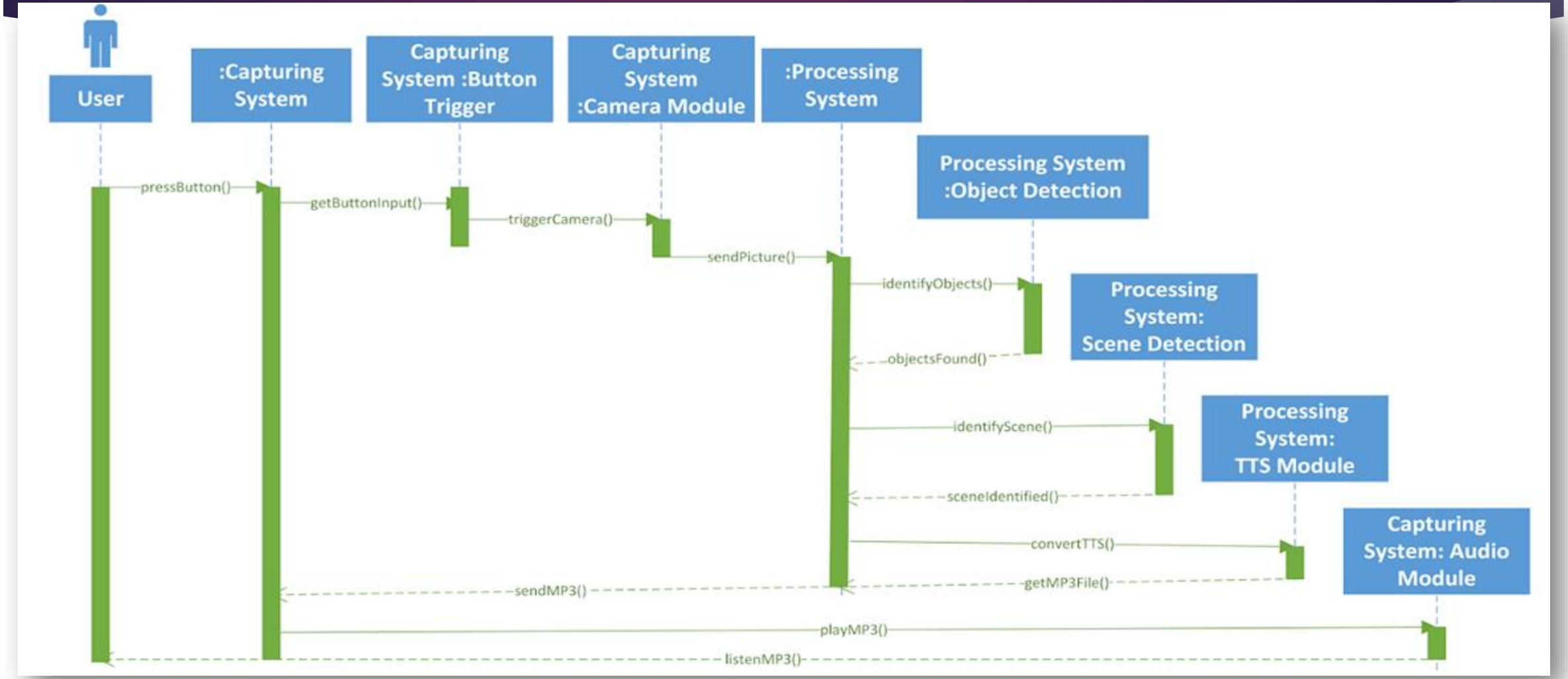
Design (Use case model)



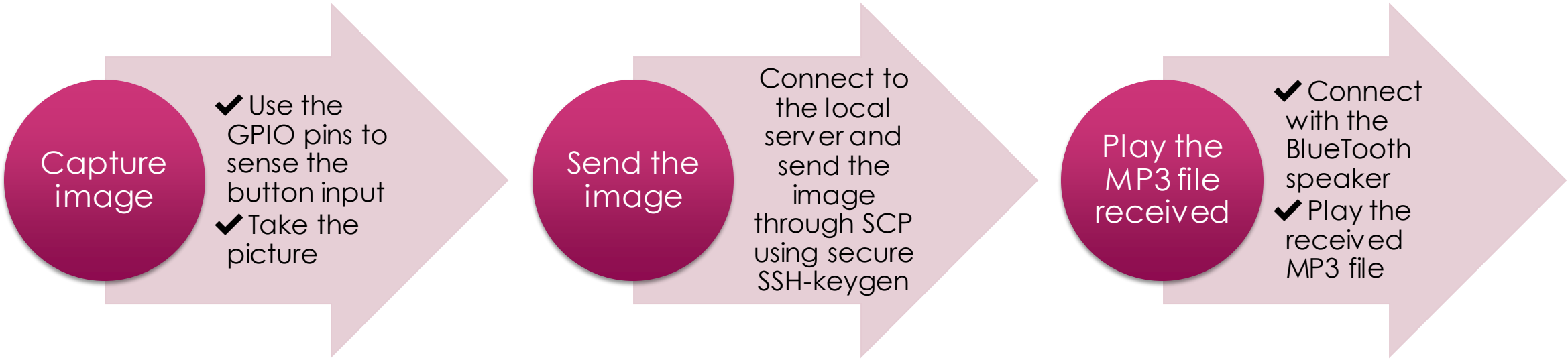
Design (Sequence Diagram)



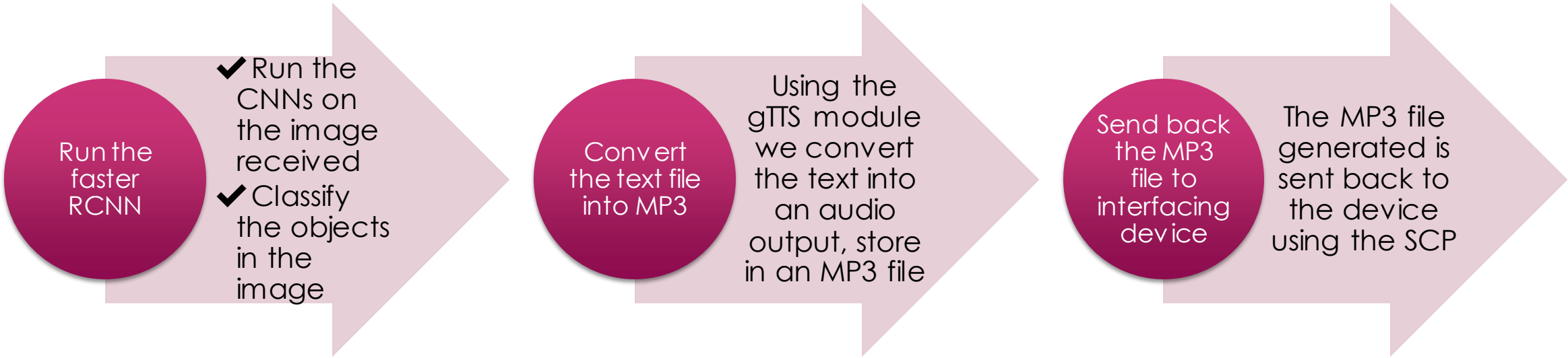
Implementation

- Primarily the system consists of an **interfacing component** (capture device) i.e. Raspberry Pi and the **Processing component**
- Raspberry Pi performs a **3-stage process**:
  - **Capture image** after a button trigger
  - **Send Image** to local server
  - **Play** the received MP3 file
- The processing component is responsible for **3-stage process**:
  - **Run the Faster-RCNN** for object detection and a scene analysis thereafter
  - **Convert** the text predictions into MP3 file
  - **Send** the MP3 file to interfacing unit

Interfacing Unit(Raspberry Pi)



Processing Unit(Local server)



Code

```
image = Image.open(TEST_IMAGE_PATHS)

image_np = load_image_into_numpy_array(image)

(boxes, scores, classes, num) = sess.run([detection_boxes, detection_scores, detection_classes, num_detections])

print("The objects in the image:", file=recordFile)

for i in matching_classes:

        if (np.squeeze(scores)[i] >= 0.7):

                print(category_index[i]['name'], file=recordFile)
```

Screenshot of the output

Thanking You!