



EMBEDDED VISION - MINOR EMBEDDED

APPLYING MACHINE LEARNING TO 'WHACK-A-MOLE'

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1 Introduction

Machine learning is increasingly being integrated into a wide range of applications, offering new possibilities for innovation and efficiency. [1] This project explores the development of an interactive "Whack-a-Mole" game that leverages machine learning for gesture recognition. The objective is to create a dynamic and engaging experience that combines traditional game play elements with machine learning. The "Whack-a-Mole" game, a classic arcade game, is transformed into an interactive experience that incorporates real-time gesture recognition using a camera, a Raspberry Pi, LED lights, and a machine learning model. This integration of embedded vision with traditional gaming demonstrates the practical applications of machine learning .

Machine learning for image recognition involves the use of models and algorithms that enable computers to identify and categorize objects, people, text, and other elements within images. Machine learning models that are used for image recognition are trained on large datasets of labeled images. In this project, gesture recognition is achieved by training a machine learning model to recognize specific movements using a camera feed. This is implemented using TensorFlow, an open-source machine learning framework known for its versatility and powerful tools for deep learning. TensorFlow provides access to a variety of pre-trained models for image recognition, such as MobileNet and ResNet, which have been trained on large datasets like ImageNet. These models can be fine-tuned on custom datasets, significantly reducing the time and computational resources required to develop a model from scratch.

This report will provide a detailed overview of the development process from hardware design and data gathering to model development, software integration, and performance testing. This project attempts to offer a thorough tutorial on how machine learning can be used to real-time gesture recognition in interactive gaming, by going over each stage in depth.

2 Hardware Design

This section will provide an overview of the Hardware Design of the interactive "Whack-a-Mole" game, which combines traditional game play elements with real-time gesture recognition using machine learning. The hardware design for this project is centered around creating a physical game board that simulates the classic "Whack-a-Mole" arcade game using modern electronics. The main components used in the hardware design include a Raspberry Pi, LED lights to represent the moles, a camera for gesture detection.

- **Raspberry Pi 5:** The Raspberry Pi 5 serves as the main processing unit responsible for running the machine learning model, managing the game logic, and interfacing with the hardware through its GPIO (General-Purpose Input/Output) pins.
- **LED Lights:** An LED strip with individually addressable RGB LEDs (WS2812B) is used to represent the moles on the game board. Each LED light corresponds to a position on the game board grid and can be independently controlled via the Raspberry Pi to simulate the moles "popping up." The choice of addressable LEDs allows for precise control of each LED's color and brightness, adding visual feedback and enhancing the interactive experience.
- **Camera:** A smartphone camera is used to capture real-time image data, which is streamed to the Raspberry Pi using an IP camera application over the HTTP protocol. This setup leverages the high-resolution capabilities of modern smartphone cameras and the ease of wireless data transmission, allowing for flexible positioning of the camera and reducing the need for additional hardware.

The game board was constructed using a cardboard base with a 2x3 grid layout. Each grid cell corresponds to a position where a mole can appear, as shown in Figure 1. In the center of each grid cell is a hole where an LED light is mounted. These LEDs light up to simulate the appearance of moles, providing visual feedback to the player. The LEDs are connected to the Raspberry Pi using a single data wire, along with shared power and ground wires, due to the use of an LED strip with individually addressable lights. This configuration minimizes the number of connections required and simplifies the wiring.

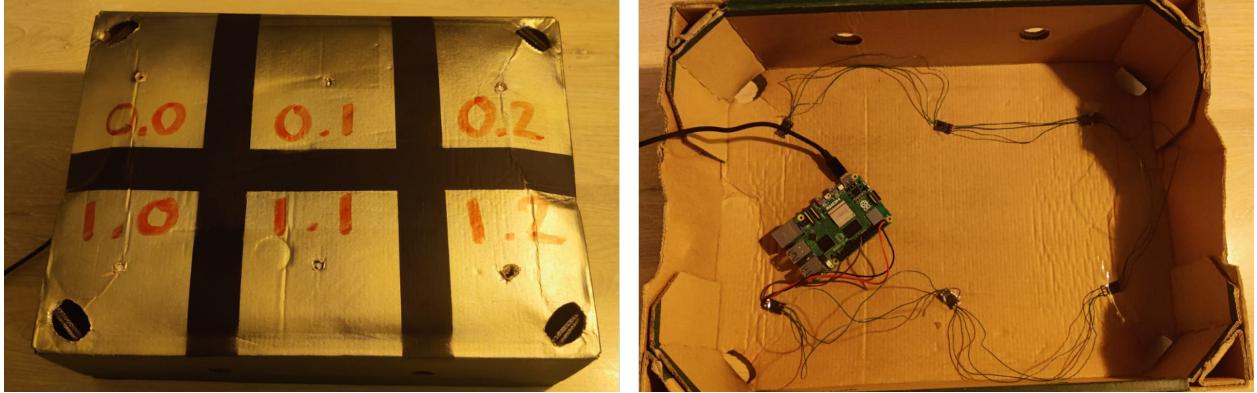


Figure 1: Game board

3 Data collection

Data collection is a critical step in developing an effective machine learning model for gesture recognition. In this project, the data collection process involved capturing video footage to train a model capable of identifying various gestures associated with the "Whack-a-Mole" game. The following subsections outline the methodology used for data collection, including video recording, frame extraction, and data organization.

3.1 Video recording

To capture the gestures required for the "Whack-a-Mole" game, a series of videos were recorded using a camera on a smartphone. The camera was positioned to focus on the game board to capture the gestures that would be performed. Different gestures corresponding to whacking various positions on a 2x3 grid were recorded from different angles. There were also videos captures without any gestures to serve as negative examples where no 'whacking' occurred. The videos title was named after the gesture it represented.

3.2 Frame Extraction

Once the videos were recorded, the next step involved extracting individual frames from each video. A Python script utilizing the OpenCV library was used to read the videos and save each frame as a separate image file. Code 1 shows the initialization of the directory structure and the labels for the gestures. These labels are used to map the gestures and create the directories in which the images that represent a specific gesture are saved.

```
1 base_output_directory = 'dataset'
2 os.makedirs(base_output_directory, exist_ok=True)
3 video_directories_names = ['00-wack', '01-wack', '02-wack', '10-wack', '11-wack', '12-wack', 'nowack']
```

Code 1: Creating the dataset

Code 2 shows the function to retrieve the frames from a video and save them as individual image files in a directory corresponding to a specific label. This function is used to loop over all the video files that were recorded and store all the images to create the dataset for the machine learning model. After extraction, each saved frame was manually reviewed to ensure it accurately represented the intended gesture and was of sufficient quality for training purposes.

```
1 def retrieve_frames(video_path, class_name, frame_count):
2     cap = cv2.VideoCapture(video_path)
3     while True:
4         ret, frame = cap.read()
5         if not ret:
6             break
7         output_directory = os.path.join(base_output_directory, class_name)
8         os.makedirs(output_directory, exist_ok=True)
9         frame_filename = os.path.join(output_directory, f'{class_name}-{frame_count:04d}.jpg')
10        cv2.imwrite(frame_filename, frame)
11        frame_count += 1
12    cap.release()
13
14    return frame_count
```

Code 2: Retrieve frames from video

3.3 Sorting and preprocessing

After extracting the frames from the videos, the images were sorted and preprocessed to prepare them for training the machine learning model. A new directory structure was created with sub directories for training, validation, and testing datasets. To utilize the pretrained MobileNetV2 model, the frame size was set to 160x160 pixels. The dataset was then split into training, validation, and test sets with a ratio of 70% for training, 15% for validation, and 15% for testing, as shown in Code 3.

```
1 os.makedirs(data, exist_ok=True)
2 train_dir = 'data/train'
3 os.makedirs(train_dir, exist_ok=True)
4 val_dir = 'data/validation'
5 os.makedirs(val_dir, exist_ok=True)
6 test_dir = 'data/test'
7 os.makedirs(test_dir, exist_ok=True)
8 frame_size = (160, 160)
9 train_ratio = 0.7
10 val_ratio = 0.15
11 test_ratio = 0.15
```

Code 3: Initialize the sorting

Code 4 shows the code that was used to preprocess and split images extracted from videos. It shuffles the frames to make sure there is a good mix in each dataset. It resizes and normalizes the frames for consistency with model input requirements, and organizes the frames into separate directories for training, validation and testing based on the predefined ratios. The images in the training directory are used for learning, the images in the validation directory are used for tuning and the images in the test directory are used for final evaluation.

```
1 for video_dir in video_directories_names:
2     input_directory = 'dataset/' + video_dir
3
4     frame_files = os.listdir(input_directory)
5     random.shuffle(frame_files)
6
7     train_split = int(len(frame_files) * train_ratio)
8     val_split = int(len(frame_files) * (train_ratio + val_ratio))
9
10    for i, frame_file in enumerate(frame_files):
11
12        frame_path = os.path.join(input_directory, frame_file)
13        frame = cv2.imread(frame_path)
14
15        resized_frame = cv2.resize(frame, frame_size)
16        normalized_frame = resized_frame / 255.0
17        normalized_frame_uint8 = (normalized_frame * 255).astype(np.uint8)
18
19        if i < train_split:
20            split_dir = train_dir
21        elif i < val_split:
22            split_dir = val_dir
23        else:
24            split_dir = test_dir
25
26        output_dir = os.path.join(split_dir, video_dir)
27        os.makedirs(output_dir, exist_ok=True)
28
29        output_frame_path = os.path.join(output_dir, frame_file)
30        cv2.imwrite(output_frame_path, normalized_frame_uint8)
```

Code 4: Sorting and preprocessing

3.4 Dataset

The distribution of the images and the amount of images for each class is shown in figure 2. It shows that every class has roughly the same amount of data except for the first class.

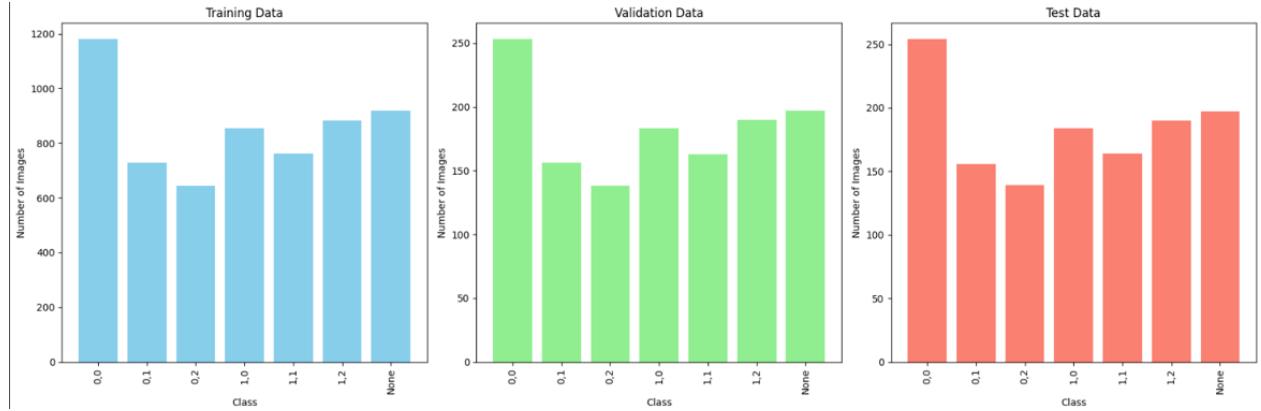


Figure 2: Dataset

4 Model Development

The next step is the model development process. This involves preparing the data, selecting and configuring the model, training the model, and evaluating its performance. For this project there are two models created and tested to also see if there is a difference in performance. Both models are trained on the same dataset.

4.1 Initialize train data

Code 7 shows the data augmentation for the train data. The augmentation parameters for model one have moderate variations to the training data, applying shifts, shear and zoom. For model two the data is even more augmented with larger shifts, shearing, zoom, rotation, brightness adjustment, and horizontal flipping. This creates a more diverse training set that can potentially improve the model.

```
1 # Train data model 1
2 train_datagen = ImageDataGenerator(
3     rescale=1./255,
4     width_shift_range=0.2,
5     height_shift_range=0.2,
6     shear_range=0.2,
7     zoom_range=0.2,
8     fill_mode='nearest'
9 )
10 # Train data model 2
11 train_datagen = ImageDataGenerator(
12     rescale=1./255,
13     width_shift_range=0.3,
14     height_shift_range=0.3,
15     shear_range=0.3,
16     zoom_range=0.3,
17     rotation_range=30,
18     brightness_range=[0.8, 1.2],
19     horizontal_flip=True,
20     fill_mode='nearest'
21 )
```

Code 5: Initialize train dataset

4.2 Building the model

The base model is for both the MobileNetV2. Model one has a simple architecture with minimal additional layers: a pooling layer, one dense layer and the output layer but the model should still be capable of capturing complex patterns because of the pre-trained base model. The architecture of model two is more complex and adds several connected layers, batch normalization layers and dropout layers. The model is more complex which makes it more capable of learning patterns but also more computationally intensive.

```
1 # Building model 1
2 model = Sequential([
3     base_model,
4     GlobalAveragePooling2D(),
5     Dense(128, activation='relu'),
6     Dense(len(train_generator.class_indices), activation='softmax')
7 ])
8 # Building model 2
9 model = keras.Sequential([
10     base_model,
11
12     GlobalAveragePooling2D(),
13     Dense(256, activation='relu'),
14     BatchNormalization(),
15     keras.layers.Dropout(0.5),
16 ])
```

```

17     Dense(128, activation='relu'), # Another fully connected layer
18     BatchNormalization(), # Batch normalization
19     keras.layers.Dropout(0.5), # Dropout for regularization
20
21     Dense(68, activation='relu'), # Another fully connected layer
22     BatchNormalization(), # Batch normalization
23     keras.layers.Dropout(0.5), # Dropout for regularization
24
25     Dense(len(train_generator.class_indices), activation='softmax')
26 )

```

Code 6: Building the model

4.3 Training the models

Model one is trained for 10 epochs without any additional callbacks or early stopping criteria. However model two is trained with 30 epochs, with a possibility of stopping early if no improvements have been seen in validation loss for five consecutive epochs. Both the training outputs can be found in section 9.1 and model one is shown in code 19 and model two in code 20.

```

1 # Train model 1
2 history = model.fit(
3     train_generator,
4     epochs=10,
5     validation_data=val_generator
6 )
7 # Train model 2
8 early_stopping = EarlyStopping(monitor='val_loss', patience=5, restore_best_weights=True)
9 checkpoint = ModelCheckpoint('best_model.keras', monitor='val_loss', save_best_only=True)
10
11 history = model.fit(
12     train_generator,
13     epochs=30,
14     validation_data=val_generator,
15     callbacks=[early_stopping, checkpoint]
16 )

```

Code 7: Training the model

4.4 Evaluation training models

The graphs in figure 4 shows how accurately the model performs on the training and validation datasets. And it shows thee loss values for the model on the training and validation sets. Model one shows faster convergence and higher initial accuracy and loss reduction. While model two starts slow but shows a steady improvement. Model one ended the training with a test accuracy of 0.94 percent and model two ended the training with a test accuracy of 0.88 percent.

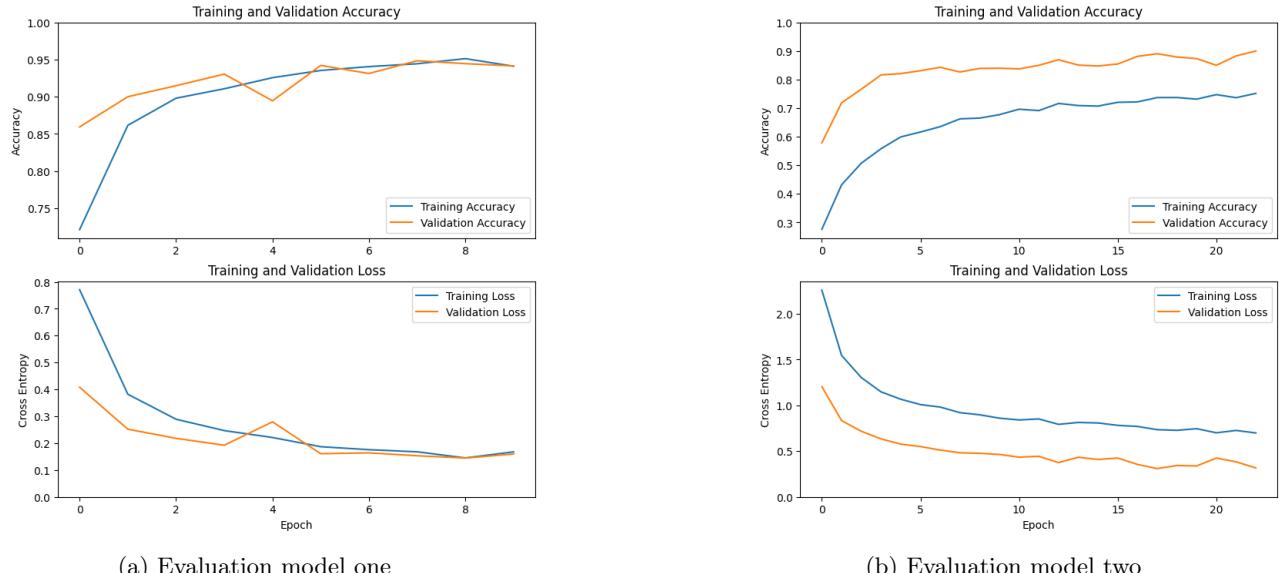


Figure 3: Evaluation training models

4.5 Fine tuning the models

Code 8 shows the fine tuning for both models. Model one will fine tune for 10 epochs without specific callbacks for saving or early stopping. Model two will fine tune for a longer period and uses callbacks to manage model saving and early stopping. Both the fine tune outputs can be found in section 9.2 and model one is shown in code 21 and model two in code 22.

```

1 # Same for both models
2 base_model.trainable = True
3 fine_tune_at = 100
4 for layer in base_model.layers[:fine_tune_at]:
5     layer.trainable = False
6 model.compile(optimizer=tf.keras.optimizers.Adam(learning_rate=1e-5),
7                 loss='categorical_crossentropy',
8                 metrics=['accuracy'])
9
10 # Train model 1
11 fine_tune_epochs = 10
12 total_epochs = 10 + fine_tune_epochs
13 fine_tune_history = model.fit(
14     train_generator,
15     epochs=total_epochs,
16     initial_epoch=len(history.epoch),
17     validation_data=val_generator
18 )
19 # Train model 2
20 model.compile(optimizer=tf.keras.optimizers.Adam(learning_rate=1e-5),
21                 loss='categorical_crossentropy',
22                 metrics=['accuracy'])
23 checkpoint = tf.keras.callbacks.ModelCheckpoint('best_finetuned_model.keras',
24                                                 monitor='val_loss',
25                                                 save_best_only=True)
26 early_stopping = tf.keras.callbacks.EarlyStopping(monitor='val_loss',
27                                                 patience=5,
28                                                 restore_best_weights=True)
29 fine_tune_epochs = 27
30 total_epochs = 23 + fine_tune_epochs
31 fine_tune_history = model.fit(
32     train_generator,
```

```

33     epochs=total_epochs,
34     initial_epoch=len(history.epoch),
35     validation_data=val_generator,
36     callbacks=[checkpoint, early_stopping]
37 )

```

Code 8: Fine tuning the model

4.6 Evaluation fine tune models

Model one shows that the training loss is decreasing during fine tuning probably because of potential over fitting. While model two is more gradual in the movement and stable. If the goal is to achieve the highest possible accuracy quickly then model one is the best choice. Model two is the choice for more stable and generalized performance. Model one ended the fine tuning with a test accuracy of 0.95 percent and model two ended the fine tuning with a test accuracy of 0.96 percent.

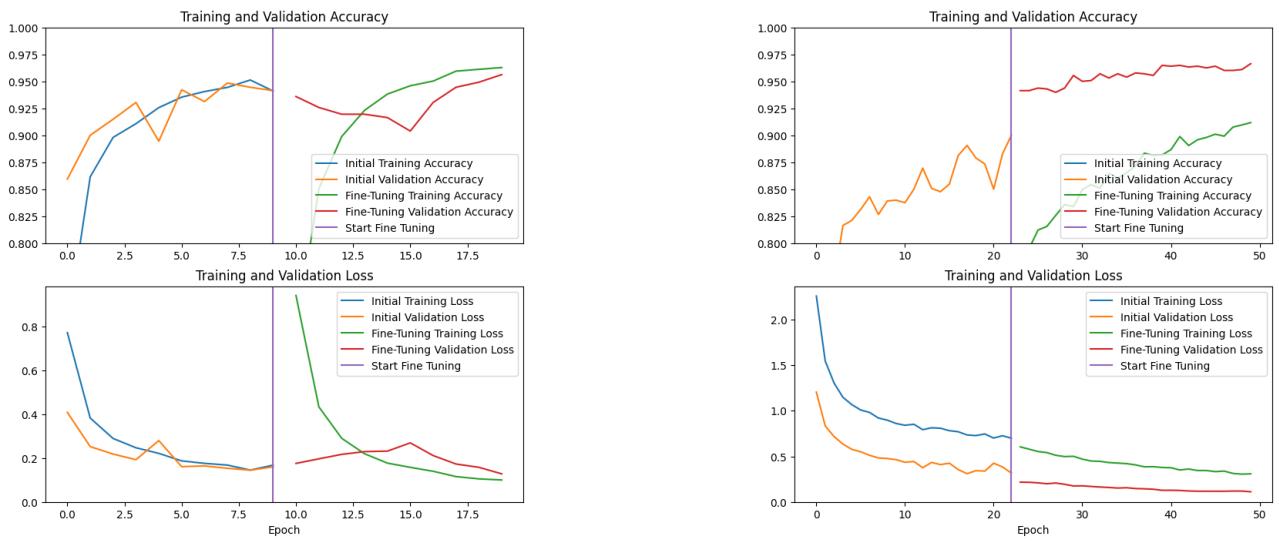


Figure 4: Evaluation fine tune models

5 Software integration

The software integration phase of this project involves combining the various components to create a functional "Whack-a-Mole" game. The main elements of the software integration are the machine learning model, the LED control system, the camera input and the game logic itself.

5.1 LED

The LEDs will simulate the appearance of moles. To control the LEDs the 'board' and the 'neopixel_spi' libraries are used. The board library is used to control the GPIO and the neopixel_spi is used to control the LEDs. Code 9 shows the initialization of the LED class. This will initialize the LED strip with the SPI protocol and specifies that there are six LED lights. It also sets the color of the mole to red as a default.

```
1 def __init__(self):
2     self.pixels = neopixel_spi.NeoPixel_SPI(board.SPI(), 6)
3     self.mole_color = (255, 0, 0)
```

Code 9: LED init

Code 10 shows the other functions inside the LED class. The first function is used to turn off all the LEDs for example when the game ends. The other two functions take a number as parameter and set that specific LED on or off.

```
1 def turn_off_led(self):
2     self.pixels.fill((0, 0, 0))
3     self.pixels.show()
4
5 def turn_on_random_led(self, random_led):
6     self.pixels[random_led] = self.mole_color
7     self.pixels.show()
8
9 def turn_off_random_led(self, random_led):
10    self.pixels[random_led] = (0, 0, 0)
11    self.pixels.show()
```

Code 10: LED control

5.2 Camera

The camera will capture the frames that are processed and used to recognize the gestures of the player. This class uses several libraries such as: OpenCV, NumPy, and TensorFlow. Code 11 initializes the camera object by creating a video capture object using the OpenCV library.

```
1 def __init__(self):
2     self.cap = cv2.VideoCapture('http://192.168.2.29:8080/video')
```

Code 11: Camera init

Code 12 shows the functions to check the connection to the camera and releasing the camera. The check connection function will be called at the beginning to confirm a connection to the camera. When the game is over the camera object will be released with the close camera function.

```
1 def check_camera(self):
2     if not self.cap.isOpened():
3         return False
```

```

4     else:
5         return True
6
7 def close_camera(self):
8     self.cap.release()

```

Code 12: Camera check and close

Code 13 shows the functions that will capture the frames and process the frames. The capture frame function reads a frame from the camera and will return the captured frame. The process function will preprocess the captured frame to make it a suitable input for the machine learning model. It will first resize the frame to 160*160 pixels as required by the model. Then it will convert the resized image to an array and add a extra dimension as is required by the model for batch processing. And lastly it will scale the pixel values between -1 and 1 because this is the input format expected by the model.

```

1 def capture_frame(self):
2     ret, frame = self.cap.read()
3     if not ret:
4         return None
5     else:
6         return frame
7
8 def process_frame(self, frame):
9     img = cv2.resize(frame, (160, 160))
10    img_array = image.img_to_array(img)
11    img_array = np.expand_dims(img_array, axis=0)
12    img_array = tf.keras.applications.mobilenet_v2.preprocess_input(img_array)
13    return img_array

```

Code 13: Camera capture and process

5.3 Game logic

Next is the game logic that will combine the LED class, Camera class and is responsible for the game loop. It uses the libraries: TensorFlow, random, time and numpy. Code 14 shows the four global variables: the model that is loaded, the class labels that define the possible gestures, and the led and camera class.

```

1 model = tf.keras.models.load_model('model.h5')
2 class_labels = ['00-wack', '01-wack', '02-wack', '10-wack', '11-wack', '12-wack', 'nowack']
3 led_control = led.led()
4 camera_control = camera.camera()

```

Code 14: Global variables

Code 15 shows the function that will process the image and returns the predicted gesture together with the confidence level of that prediction. As parameter it takes an image array that is created using thee function that was shown in code 13.

```

1 def make_prediction(img_array):
2     prediction = model.predict(img_array, verbose=0).flatten()
3     predicted_index = np.argmax(prediction)
4     predicted_label = class_labels[predicted_index]
5     confidence = prediction[predicted_index] * 100
6     print(f"Predicted class: {predicted_label}")
7     print(f"Model is {confidence:.2f}% sure about this prediction.")
8     return predicted_label, confidence

```

Code 15: Make prediction

Code 16 shows the function that will capture the player movement and returns a list of frames. This function will capture frames for a short period of time (0.8 seconds) and ignores the first fifteen frames. It will only capture for a short period because the player has to act fast to whack the mole and to reduce processing time. It will ignore the first 15 frames because the model is not trained on the movement of the hand but only on the end position so by ignoring the first few frames it helps to ensure that only the relevant frames are analyzed again also to reduce processing time.

```
1 def capture_player_movement():
2     start_time = time.time()
3     frames = []
4     frame_count = 0
5     while time.time() - start_time < 0.8:
6         frame = camera_control.capture_frame()
7         if frame is not None:
8             frame_count += 1
9             if frame_count > 15:
10                 frames.append(frame)
11
12 return frames
```

Code 16: Capture player movement

Code 17 shows the function that will check if the whack was correct or a miss for each frame. It will take the predicted label, confidence of that prediction, the led number and the current whack count as parameters. Because it will check for each frame the required confidence is set to 60% to reduce noise and unsure predictions to make the result more accurate. And because the player will move the hand to the mole and back it is possible that the model sees that as no whack so the weight of a no whack prediction is set to 0.5. This means if the player did not move at all it will still be seen as a no whack but if the player did move and it still recorded a no whack at the beginning or end it will be ignored.

```
1 def check_whack(predicted_label, confidence, random_led, whack_count):
2     required_confidence = 60
3     no_whack_weight = 0.5
4     if confidence < required_confidence:
5         return whack_count
6     if predicted_label == class_labels[random_led]:
7         whack_count += 1
8     elif predicted_label == 'nowack':
9         whack_count -= no_whack_weight
10
11 return whack_count
```

Code 17: Check whack

Code 18 shows the function with the core logic of the game. The game starts with a score and round count set to zero and the max rounds set to five. Then as long as the game is not interrupted it will run the game for the set amount of rounds. The while loop will run each round and starts by retrieving a random number between zero and six representing all the mole locations. Then it will turn on that specific LED simulating the mole. Then a sleep is added of 0.3 seconds to give the player a moment to react to the light and then it will start capturing the frames and when that is done it will turn off the led. The whack count is set to zero and the frames that are captured are processed and checked. The check whack function will continuously update the whack count for every frame, if the frame represents a whack it will go up and if it does not represent a whack the whack count will go down. Finally the program will print if the player correctly or incorrectly whacked the mole and update the score accordingly.

```
1 def game_loop():
2     score = 0
```

```

3     max_rounds = 5
4     round_count = 0
5
6     try:
7         while round_count < max_rounds:
8             random_led = random.randint(0, len(class_labels) - 2)
9             led_control.turn_on_random_led(random_led)
10            time.sleep(0.3)
11
12            frames = capture_player_movement()
13            led_control.turn_off_random_led(random_led)
14
15            whack_count = 0
16
17            for frame in frames:
18                img_array = camera_control.process_frame(frame)
19                predicted_label, confidence = make_prediction(img_array)
20                whack_count = check_whack(predicted_label, confidence, random_led, whack_count)
21                if whack_count > 0:
22                    score += 1
23                    print("Correct whack!\n\n")
24                else:
25                    print("Miss!\n\n")
26
27                round_count += 1
28                print(f"score is: {score}, round count is {round_count}")
29
30        except KeyboardInterrupt:
31            print("Game interrupted. Exiting...")
32            print(f"score is: {score}, round count is {round_count}")
33            led_control.turn_off_led()

```

Code 18: Game loop

6 Testing

For testing both models the same game logic and angle of the camera was used. Both models were tested five times with a duration of five rounds. And to compare the data the assumption is made that the mole was always correctly whacked by the player and if there is a miss it is because of the model. Figure 5 shows the overall model performance of each round. It shows that model two was more accurate. The output of the test results of model one can be found in section 9.3 and for model two in section 9.4.

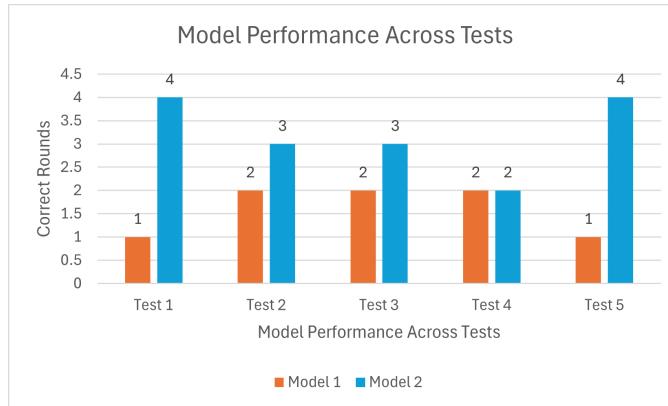


Figure 5: Model performance across tests

6.1 Heatmap model one

Figure 6 shows the heatmap of model one. This map is made by using all the data from the test rounds. It shows that during the five games of each five round the model had the most trouble with correctly predicting row one.

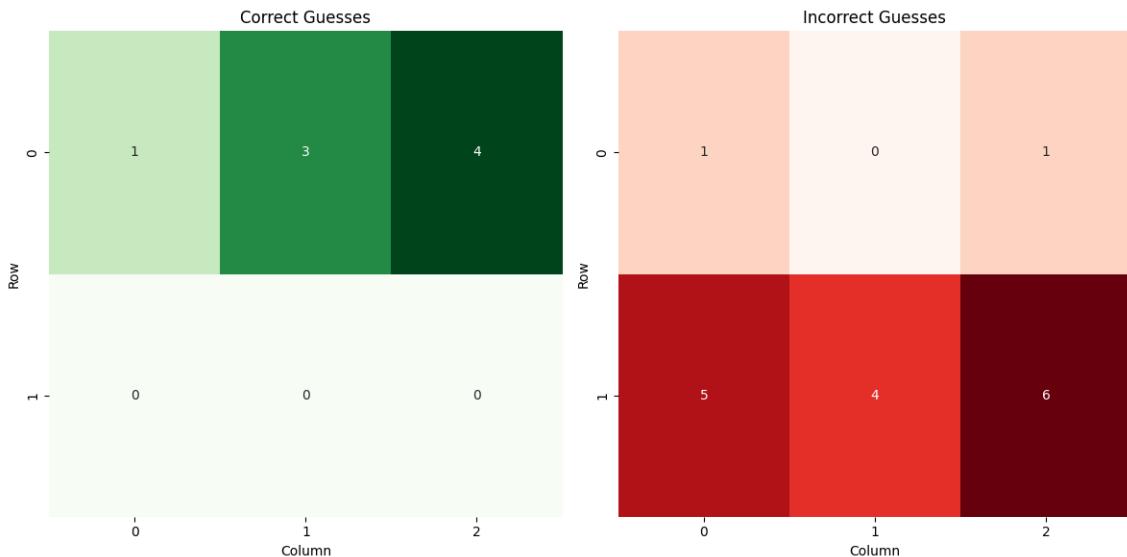


Figure 6: Heatmap model one

6.2 Heatmap model two

Figure 7 shows the heatmap of model two. Just like model one row one ahd the most incorrect predictions. And model two performed even better with row zero.

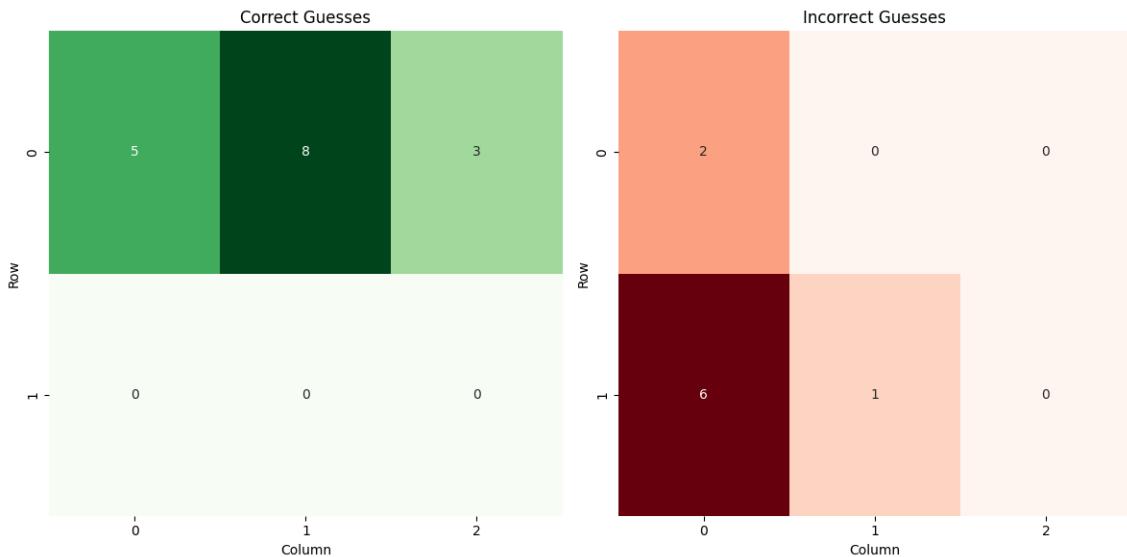


Figure 7: Heatmap model two

7 Conclusion

In conclusion the project showed that it is possible to use machine learning to enhance traditional gaming experiences by using gesture recognition. For the project there were two models trained and fine-tuned on custom datasets with the MobileNetV2 as base model. Model one, with a simple architecture was quick with the learning but prone to over fitting with less reliable performance during testing. Model two, with a more complex structure and enhanced data augmentation showed more stable and consistent results.

The testing phase showcased that even though both models ended up with almost the same accuracy number during training that there still can be a difference in performance. When looking at the training time and complexity model one would win but looking at the test results model two outperformed model one.

Future work should focus on creating an even more diverse dataset with more images from more angles. Another recommendation is to use other machine learning models that can capture temporal dynamics or gestures.

8 References

- [1] Ruairi O'Donnellan. Machine learning by the numbers: Its impact on business - Intuition. *Intuition*, February 2024.

9 Appendix

9.1 Training output models

```
1 Epoch 1/10
2 187/187 ----- 178s 902ms/step - accuracy: 0.5835 - loss: 1.1209 - val_accuracy: 0.8594 - val_loss: 0.4081
3 Epoch 2/10
4 187/187 ----- 115s 607ms/step - accuracy: 0.8549 - loss: 0.4232 - val_accuracy: 0.9000 - val_loss: 0.2521
5 Epoch 3/10
6 187/187 ----- 149s 787ms/step - accuracy: 0.9004 - loss: 0.2881 - val_accuracy: 0.9148 - val_loss: 0.2182
7 Epoch 4/10
8 187/187 ----- 140s 741ms/step - accuracy: 0.9095 - loss: 0.2567 - val_accuracy: 0.9305 - val_loss: 0.1925
9 Epoch 5/10
10 187/187 ----- 113s 592ms/step - accuracy: 0.9297 - loss: 0.2115 - val_accuracy: 0.8945 - val_loss: 0.2795
11 Epoch 6/10
12 187/187 ----- 118s 614ms/step - accuracy: 0.9328 - loss: 0.1906 - val_accuracy: 0.9422 - val_loss: 0.1608
13 Epoch 7/10
14 187/187 ----- 116s 611ms/step - accuracy: 0.9367 - loss: 0.1842 - val_accuracy: 0.9312 - val_loss: 0.1642
15 Epoch 8/10
16 187/187 ----- 113s 591ms/step - accuracy: 0.9474 - loss: 0.1646 - val_accuracy: 0.9484 - val_loss: 0.1533
17 Epoch 9/10
18 187/187 ----- 133s 690ms/step - accuracy: 0.9496 - loss: 0.1512 - val_accuracy: 0.9445 - val_loss: 0.1448
19 Epoch 10/10
20 187/187 ----- 127s 668ms/step - accuracy: 0.9413 - loss: 0.1644 - val_accuracy: 0.9414 - val_loss: 0.1598
```

Code 19: Training model one output

```
1 Epoch 1/30
2 187/187 ----- 139s 690ms/step - accuracy: 0.2116 - loss: 2.6792 - val_accuracy: 0.5789 - val_loss: 1.2050
3 Epoch 2/30
4 187/187 ----- 150s 782ms/step - accuracy: 0.4008 - loss: 1.6575 - val_accuracy: 0.7188 - val_loss: 0.8339
5 Epoch 3/30
6 187/187 ----- 161s 844ms/step - accuracy: 0.5043 - loss: 1.3383 - val_accuracy: 0.7664 - val_loss: 0.7171
7 Epoch 4/30
8 187/187 ----- 181s 946ms/step - accuracy: 0.5541 - loss: 1.1626 - val_accuracy: 0.8164 - val_loss: 0.6344
9 Epoch 5/30
10 187/187 ----- 167s 877ms/step - accuracy: 0.5996 - loss: 1.0845 - val_accuracy: 0.8211 - val_loss: 0.5770
11 Epoch 6/30
12 187/187 ----- 194s 1s/step - accuracy: 0.6111 - loss: 1.0119 - val_accuracy: 0.8313 - val_loss: 0.5506
13 Epoch 7/30
14 187/187 ----- 200s 1s/step - accuracy: 0.6309 - loss: 0.9810 - val_accuracy: 0.8430 - val_loss: 0.5119
15 Epoch 8/30
16 187/187 ----- 190s 989ms/step - accuracy: 0.6621 - loss: 0.9229 - val_accuracy: 0.8266 - val_loss: 0.4829
17 Epoch 9/30
18 187/187 ----- 179s 938ms/step - accuracy: 0.6728 - loss: 0.8732 - val_accuracy: 0.8391 - val_loss: 0.4764
19 Epoch 10/30
20 187/187 ----- 173s 907ms/step - accuracy: 0.6775 - loss: 0.8524 - val_accuracy: 0.8398 - val_loss: 0.4642
21 Epoch 11/30
22 187/187 ----- 205s 1s/step - accuracy: 0.6838 - loss: 0.8656 - val_accuracy: 0.8375 - val_loss: 0.4347
23 Epoch 12/30
24 187/187 ----- 191s 997ms/step - accuracy: 0.6911 - loss: 0.8414 - val_accuracy: 0.8500 - val_loss: 0.4440
25 Epoch 13/30
26 187/187 ----- 174s 913ms/step - accuracy: 0.7133 - loss: 0.8076 - val_accuracy: 0.8695 - val_loss: 0.3756
27 ...
28 Epoch 22/30
29 187/187 ----- 188s 984ms/step - accuracy: 0.7332 - loss: 0.7259 - val_accuracy: 0.8828 - val_loss: 0.3836
30 Epoch 23/30
31 187/187 ----- 190s 1s/step - accuracy: 0.7504 - loss: 0.6990 - val_accuracy: 0.9000 - val_loss: 0.3167
```

Code 20: Training model two output

9.2 Fine tune output models

```
1 Epoch 11/20
2 187/187 ----- 190s 912ms/step - accuracy: 0.6242 - loss: 1.3236 - val_accuracy: 0.9359 - val_loss: 0.1755
3 Epoch 12/20
4 187/187 ----- 207s 1s/step - accuracy: 0.8333 - loss: 0.4719 - val_accuracy: 0.9258 - val_loss: 0.1964
5 Epoch 13/20
6 187/187 ----- 204s 1s/step - accuracy: 0.8894 - loss: 0.3194 - val_accuracy: 0.9195 - val_loss: 0.2168
7 Epoch 14/20
8 187/187 ----- 189s 989ms/step - accuracy: 0.9271 - loss: 0.2176 - val_accuracy: 0.9195 - val_loss: 0.2293
9 Epoch 15/20
10 187/187 ----- 217s 1s/step - accuracy: 0.9346 - loss: 0.1879 - val_accuracy: 0.9164 - val_loss: 0.2316
11 Epoch 16/20
12 187/187 ----- 191s 1s/step - accuracy: 0.9443 - loss: 0.1557 - val_accuracy: 0.9039 - val_loss: 0.2692
13 Epoch 17/20
14 187/187 ----- 135s 711ms/step - accuracy: 0.9497 - loss: 0.1419 - val_accuracy: 0.9305 - val_loss: 0.2113
15 Epoch 18/20
16 187/187 ----- 120s 635ms/step - accuracy: 0.9571 - loss: 0.1216 - val_accuracy: 0.9445 - val_loss: 0.1728
17 Epoch 19/20
18 187/187 ----- 124s 656ms/step - accuracy: 0.9615 - loss: 0.1045 - val_accuracy: 0.9492 - val_loss: 0.1578
19 Epoch 20/20
20 187/187 ----- 130s 689ms/step - accuracy: 0.9632 - loss: 0.0993 - val_accuracy: 0.9563 - val_loss: 0.1281
```

Code 21: Finetune model one output

```
1 Epoch 24/50
2 187/187 ----- 194s 914ms/step - accuracy: 0.7867 - loss: 0.6237 - val_accuracy: 0.9414 - val_loss: 0.2172
3 Epoch 25/50
4 187/187 ----- 245s 1s/step - accuracy: 0.7962 - loss: 0.5774 - val_accuracy: 0.9414 - val_loss: 0.2158
5 Epoch 26/50
6 187/187 ----- 255s 1s/step - accuracy: 0.8213 - loss: 0.5465 - val_accuracy: 0.9438 - val_loss: 0.2093
7 Epoch 27/50
8 187/187 ----- 331s 2s/step - accuracy: 0.8126 - loss: 0.5478 - val_accuracy: 0.9430 - val_loss: 0.1999
9 Epoch 28/50
10 187/187 ----- 312s 2s/step - accuracy: 0.8175 - loss: 0.5372 - val_accuracy: 0.9398 - val_loss: 0.2077
11 Epoch 29/50
12 187/187 ----- 246s 1s/step - accuracy: 0.8370 - loss: 0.4932 - val_accuracy: 0.9438 - val_loss: 0.1937
13 Epoch 30/50
14 187/187 ----- 257s 1s/step - accuracy: 0.8356 - loss: 0.4990 - val_accuracy: 0.9555 - val_loss: 0.1752
15 Epoch 31/50
16 187/187 ----- 257s 1s/step - accuracy: 0.8541 - loss: 0.4638 - val_accuracy: 0.9500 - val_loss: 0.1767
17 Epoch 32/50
18 187/187 ----- 276s 1s/step - accuracy: 0.8589 - loss: 0.4432 - val_accuracy: 0.9508 - val_loss: 0.1703
19 Epoch 33/50
20 187/187 ----- 262s 1s/step - accuracy: 0.8520 - loss: 0.4418 - val_accuracy: 0.9570 - val_loss: 0.1636
21 Epoch 34/50
22 187/187 ----- 257s 1s/step - accuracy: 0.8615 - loss: 0.4304 - val_accuracy: 0.9531 - val_loss: 0.1588
23 Epoch 35/50
24 187/187 ----- 258s 1s/step - accuracy: 0.8572 - loss: 0.4336 - val_accuracy: 0.9570 - val_loss: 0.1526
25 Epoch 36/50
26 ...
27 Epoch 49/50
28 187/187 ----- 199s 1s/step - accuracy: 0.9055 - loss: 0.3149 - val_accuracy: 0.9609 - val_loss: 0.1193
29 Epoch 50/50
30 187/187 ----- 149s 781ms/step - accuracy: 0.9111 - loss: 0.3137 - val_accuracy: 0.9664 - val_loss: 0.1122
```

Code 22: Fine tune model two output

9.3 Test results model one

odel.
starting the game

```
capturing frames...
random led is: 5
Mole is on 12-wack
amount of frames is 20
Predicted class: 02-wack
Model is 62.20% sure about this prediction.
Predicted class: 02-wack
Model is 56.24% sure about this prediction.
Predicted class: 02-wack
Model is 74.37% sure about this prediction.
Predicted class: 02-wack
Model is 74.73% sure about this prediction.
Predicted class: 02-wack
Model is 59.90% sure about this prediction.
Predicted class: 02-wack
Model is 69.00% sure about this prediction.
Predicted class: 02-wack
Model is 94.89% sure about this prediction.
Predicted class: 02-wack
Model is 85.92% sure about this prediction.
Predicted class: 02-wack
Model is 81.10% sure about this prediction.
Predicted class: 02-wack
Model is 72.87% sure about this prediction.
Predicted class: 02-wack
Model is 55.31% sure about this prediction.
Predicted class: 02-wack
Model is 78.57% sure about this prediction.
Predicted class: 02-wack
Model is 75.03% sure about this prediction.
Predicted class: 02-wack
Model is 71.75% sure about this prediction.
Predicted class: 02-wack
Model is 88.41% sure about this prediction.
Predicted class: 02-wack
Model is 82.67% sure about this prediction.
Predicted class: 02-wack
Model is 91.43% sure about this prediction.
Predicted class: 02-wack
Model is 93.64% sure about this prediction.
Predicted class: 02-wack
Model is 94.07% sure about this prediction.
Predicted class: 02-wack
Model is 94.81% sure about this prediction.
Miss!
```

```
score is: 0, round count is 1
capturing frames...
random led is: 2
Mole is on 02-wack
amount of frames is 33
Predicted class: 02-wack
Model is 79.23% sure about this prediction.
```

Predicted class: 02-wack
Model is 82.99% sure about this prediction.
Predicted class: 02-wack
Model is 88.07% sure about this prediction.
Predicted class: 02-wack
Model is 91.07% sure about this prediction.
Predicted class: 02-wack
Model is 88.09% sure about this prediction.
Predicted class: 02-wack
Model is 82.94% sure about this prediction.
Predicted class: 02-wack
Model is 92.27% sure about this prediction.
Predicted class: 02-wack
Model is 91.04% sure about this prediction.
Predicted class: 02-wack
Model is 91.93% sure about this prediction.
Predicted class: 02-wack
Model is 92.49% sure about this prediction.
Predicted class: 02-wack
Model is 84.91% sure about this prediction.
Predicted class: 02-wack
Model is 83.67% sure about this prediction.
Predicted class: 02-wack
Model is 97.25% sure about this prediction.
Predicted class: 01-wack
Model is 97.79% sure about this prediction.
Predicted class: 01-wack
Model is 99.68% sure about this prediction.
Predicted class: 01-wack
Model is 99.22% sure about this prediction.
Predicted class: 01-wack
Model is 79.85% sure about this prediction.
Predicted class: 01-wack
Model is 94.01% sure about this prediction.
Predicted class: 01-wack
Model is 97.12% sure about this prediction.
Predicted class: 01-wack
Model is 81.56% sure about this prediction.
Predicted class: 01-wack
Model is 61.95% sure about this prediction.
Predicted class: 01-wack
Model is 99.81% sure about this prediction.
Predicted class: 01-wack
Model is 97.00% sure about this prediction.
Predicted class: 01-wack
Model is 98.22% sure about this prediction.
Predicted class: 01-wack
Model is 98.33% sure about this prediction.
Predicted class: 01-wack
Model is 94.80% sure about this prediction.
Predicted class: 01-wack
Model is 94.94% sure about this prediction.
Predicted class: 01-wack
Model is 93.35% sure about this prediction.

```
Predicted class: 01-wack
Model is 96.23% sure about this prediction.
Predicted class: 01-wack
Model is 94.51% sure about this prediction.
Predicted class: 01-wack
Model is 80.06% sure about this prediction.
Predicted class: 01-wack
Model is 94.01% sure about this prediction.
Predicted class: 01-wack
Model is 96.99% sure about this prediction.
Correct whack!
```

```
score is: 1, round count is 2
capturing frames...
random led is: 4
Mole is on 11-wack
amount of frames is 34
Predicted class: 01-wack
Model is 58.23% sure about this prediction.
Predicted class: 02-wack
Model is 62.19% sure about this prediction.
Predicted class: 01-wack
Model is 70.60% sure about this prediction.
Predicted class: 01-wack
Model is 54.68% sure about this prediction.
Predicted class: 01-wack
Model is 63.58% sure about this prediction.
Predicted class: 01-wack
Model is 52.48% sure about this prediction.
Predicted class: 02-wack
Model is 57.10% sure about this prediction.
Predicted class: 02-wack
Model is 73.95% sure about this prediction.
Predicted class: 01-wack
Model is 82.29% sure about this prediction.
Predicted class: 01-wack
Model is 92.22% sure about this prediction.
Predicted class: 01-wack
Model is 91.02% sure about this prediction.
Predicted class: 01-wack
Model is 88.83% sure about this prediction.
Predicted class: 01-wack
Model is 75.57% sure about this prediction.
Predicted class: 02-wack
Model is 73.02% sure about this prediction.
Predicted class: 02-wack
Model is 68.40% sure about this prediction.
Predicted class: 02-wack
Model is 74.75% sure about this prediction.
Predicted class: 01-wack
Model is 68.67% sure about this prediction.
Predicted class: 02-wack
Model is 88.91% sure about this prediction.
```

```
Predicted class: 02-wack
Model is 69.75% sure about this prediction.
Predicted class: 02-wack
Model is 84.42% sure about this prediction.
Predicted class: 02-wack
Model is 86.93% sure about this prediction.
Predicted class: 02-wack
Model is 61.96% sure about this prediction.
Predicted class: 02-wack
Model is 83.37% sure about this prediction.
Predicted class: 02-wack
Model is 93.81% sure about this prediction.
Predicted class: 02-wack
Model is 79.99% sure about this prediction.
Predicted class: 02-wack
Model is 93.63% sure about this prediction.
Predicted class: 02-wack
Model is 69.52% sure about this prediction.
Predicted class: 02-wack
Model is 75.95% sure about this prediction.
Predicted class: 02-wack
Model is 77.92% sure about this prediction.
Predicted class: 02-wack
Model is 75.64% sure about this prediction.
Predicted class: 02-wack
Model is 90.15% sure about this prediction.
Predicted class: 02-wack
Model is 71.14% sure about this prediction.
Predicted class: 02-wack
Model is 85.36% sure about this prediction.
Predicted class: 02-wack
Model is 91.83% sure about this prediction.
Miss!
```

```
score is: 1, round count is 3
capturing frames...
random led is: 4
Mole is on 11-wack
amount of frames is 37
Predicted class: 02-wack
Model is 96.52% sure about this prediction.
Predicted class: 02-wack
Model is 93.20% sure about this prediction.
Predicted class: 02-wack
Model is 94.84% sure about this prediction.
Predicted class: 02-wack
Model is 96.59% sure about this prediction.
Predicted class: 02-wack
Model is 97.68% sure about this prediction.
Predicted class: 02-wack
Model is 98.64% sure about this prediction.
Predicted class: 02-wack
Model is 98.53% sure about this prediction.
```

Predicted class: 02-wack
Model is 96.47% sure about this prediction.
Predicted class: 02-wack
Model is 72.57% sure about this prediction.
Predicted class: 02-wack
Model is 85.66% sure about this prediction.
Predicted class: 02-wack
Model is 96.89% sure about this prediction.
Predicted class: 02-wack
Model is 73.94% sure about this prediction.
Predicted class: 02-wack
Model is 93.32% sure about this prediction.
Predicted class: 02-wack
Model is 85.94% sure about this prediction.
Predicted class: 02-wack
Model is 93.57% sure about this prediction.
Predicted class: 01-wack
Model is 52.87% sure about this prediction.
Predicted class: 02-wack
Model is 80.97% sure about this prediction.
Predicted class: 02-wack
Model is 57.31% sure about this prediction.
Predicted class: 02-wack
Model is 51.87% sure about this prediction.
Predicted class: 02-wack
Model is 63.54% sure about this prediction.
Predicted class: 02-wack
Model is 88.38% sure about this prediction.
Predicted class: 02-wack
Model is 54.87% sure about this prediction.
Predicted class: 01-wack
Model is 66.03% sure about this prediction.
Predicted class: 02-wack
Model is 65.92% sure about this prediction.
Predicted class: 02-wack
Model is 69.29% sure about this prediction.
Predicted class: 02-wack
Model is 69.44% sure about this prediction.
Predicted class: 02-wack
Model is 74.28% sure about this prediction.
Predicted class: 02-wack
Model is 88.47% sure about this prediction.
Predicted class: 02-wack
Model is 77.98% sure about this prediction.
Predicted class: 02-wack
Model is 69.65% sure about this prediction.
Predicted class: 02-wack
Model is 85.58% sure about this prediction.
Predicted class: 02-wack
Model is 55.38% sure about this prediction.
Predicted class: 02-wack
Model is 87.79% sure about this prediction.
Predicted class: 02-wack
Model is 90.84% sure about this prediction.

```
Predicted class: 02-wack
Model is 91.38% sure about this prediction.
Predicted class: 02-wack
Model is 88.39% sure about this prediction.
Predicted class: 02-wack
Model is 95.04% sure about this prediction.
Miss!
```

```
score is: 1, round count is 4
capturing frames...
random led is: 3
Mole is on 10-wack
amount of frames is 37
Predicted class: 02-wack
Model is 76.12% sure about this prediction.
Predicted class: 02-wack
Model is 86.83% sure about this prediction.
Predicted class: 02-wack
Model is 82.63% sure about this prediction.
Predicted class: 02-wack
Model is 91.13% sure about this prediction.
Predicted class: 02-wack
Model is 88.95% sure about this prediction.
Predicted class: 02-wack
Model is 81.88% sure about this prediction.
Predicted class: 02-wack
Model is 76.73% sure about this prediction.
Predicted class: 01-wack
Model is 55.30% sure about this prediction.
Predicted class: 02-wack
Model is 90.59% sure about this prediction.
Predicted class: 02-wack
Model is 81.11% sure about this prediction.
Predicted class: 01-wack
Model is 63.45% sure about this prediction.
Predicted class: 01-wack
Model is 55.22% sure about this prediction.
Predicted class: 02-wack
Model is 72.50% sure about this prediction.
Predicted class: 02-wack
Model is 85.95% sure about this prediction.
Predicted class: 02-wack
Model is 83.93% sure about this prediction.
Predicted class: 01-wack
Model is 92.82% sure about this prediction.
Predicted class: 01-wack
Model is 91.94% sure about this prediction.
Predicted class: 01-wack
Model is 87.32% sure about this prediction.
Predicted class: 02-wack
Model is 90.32% sure about this prediction.
Predicted class: 02-wack
Model is 87.01% sure about this prediction.
```

```
Predicted class: 02-wack
Model is 81.72% sure about this prediction.
Predicted class: 01-wack
Model is 96.59% sure about this prediction.
Predicted class: 01-wack
Model is 96.79% sure about this prediction.
Predicted class: 01-wack
Model is 97.39% sure about this prediction.
Predicted class: 01-wack
Model is 96.49% sure about this prediction.
Predicted class: 01-wack
Model is 96.96% sure about this prediction.
Predicted class: 01-wack
Model is 94.38% sure about this prediction.
Predicted class: 01-wack
Model is 98.19% sure about this prediction.
Predicted class: 01-wack
Model is 98.26% sure about this prediction.
Predicted class: 01-wack
Model is 98.61% sure about this prediction.
Predicted class: 01-wack
Model is 94.96% sure about this prediction.
Predicted class: 01-wack
Model is 97.48% sure about this prediction.
Predicted class: 01-wack
Model is 96.77% sure about this prediction.
Predicted class: 01-wack
Model is 93.97% sure about this prediction.
Predicted class: 01-wack
Model is 97.78% sure about this prediction.
Predicted class: 01-wack
Model is 97.02% sure about this prediction.
Predicted class: 01-wack
Model is 99.33% sure about this prediction.
Miss!
```

```
score is: 1, round count is 5
```

Code 23: Model one test one

```
laris@raspberrypi:~/Desktop/whackamole $ python game.py
WARNING:absl:Compiled the loaded model, but the compiled metrics have yet to be built. `model.compile_
starting the game
capturing frames...
random led is: 4
Mole is on 11-wack
amount of frames is 20
Predicted class: 01-wack
Model is 80.96% sure about this prediction.
Predicted class: 01-wack
Model is 69.78% sure about this prediction.
Predicted class: 02-wack
```

```
Model is 92.91% sure about this prediction.  
Predicted class: 02-wack  
Model is 60.19% sure about this prediction.  
Predicted class: 01-wack  
Model is 76.81% sure about this prediction.  
Predicted class: 01-wack  
Model is 53.94% sure about this prediction.  
Predicted class: 02-wack  
Model is 77.31% sure about this prediction.  
Predicted class: 02-wack  
Model is 74.03% sure about this prediction.  
Predicted class: 02-wack  
Model is 75.41% sure about this prediction.  
Predicted class: 02-wack  
Model is 73.39% sure about this prediction.  
Predicted class: 02-wack  
Model is 80.88% sure about this prediction.  
Predicted class: 02-wack  
Model is 89.66% sure about this prediction.  
Predicted class: 02-wack  
Model is 81.30% sure about this prediction.  
Predicted class: 02-wack  
Model is 66.11% sure about this prediction.  
Predicted class: 02-wack  
Model is 79.95% sure about this prediction.  
Predicted class: 02-wack  
Model is 73.39% sure about this prediction.  
Predicted class: 02-wack  
Model is 82.98% sure about this prediction.  
Predicted class: 02-wack  
Model is 81.67% sure about this prediction.  
Predicted class: 02-wack  
Model is 91.67% sure about this prediction.  
Predicted class: 02-wack  
Model is 78.99% sure about this prediction.  
Miss!
```

```
score is: 0, round count is 1  
capturing frames...  
random led is: 2  
Mole is on 02-wack  
amount of frames is 33  
Predicted class: 01-wack  
Model is 62.25% sure about this prediction.  
Predicted class: 02-wack  
Model is 75.18% sure about this prediction.  
Predicted class: 02-wack  
Model is 62.72% sure about this prediction.  
Predicted class: 01-wack  
Model is 63.13% sure about this prediction.  
Predicted class: 02-wack  
Model is 93.21% sure about this prediction.  
Predicted class: 02-wack
```

Model is 68.27% sure about this prediction.
Predicted class: 01-wack
Model is 69.70% sure about this prediction.
Predicted class: 01-wack
Model is 83.08% sure about this prediction.
Predicted class: 02-wack
Model is 57.42% sure about this prediction.
Predicted class: 02-wack
Model is 65.80% sure about this prediction.
Predicted class: 02-wack
Model is 61.92% sure about this prediction.
Predicted class: 02-wack
Model is 77.48% sure about this prediction.
Predicted class: 02-wack
Model is 62.73% sure about this prediction.
Predicted class: 01-wack
Model is 99.85% sure about this prediction.
Predicted class: 01-wack
Model is 82.57% sure about this prediction.
Predicted class: 01-wack
Model is 99.89% sure about this prediction.
Predicted class: 01-wack
Model is 98.71% sure about this prediction.
Predicted class: 01-wack
Model is 93.15% sure about this prediction.
Predicted class: 01-wack
Model is 92.55% sure about this prediction.
Predicted class: 01-wack
Model is 99.48% sure about this prediction.
Predicted class: 01-wack
Model is 99.46% sure about this prediction.
Predicted class: 01-wack
Model is 99.06% sure about this prediction.
Predicted class: 01-wack
Model is 97.59% sure about this prediction.
Predicted class: 01-wack
Model is 97.72% sure about this prediction.
Predicted class: 01-wack
Model is 99.22% sure about this prediction.
Predicted class: 01-wack
Model is 92.96% sure about this prediction.
Predicted class: 01-wack
Model is 92.92% sure about this prediction.
Predicted class: 01-wack
Model is 92.00% sure about this prediction.
Predicted class: 01-wack
Model is 95.14% sure about this prediction.
Predicted class: 01-wack
Model is 94.70% sure about this prediction.
Predicted class: 01-wack

Model is 97.88% sure about this prediction.
Correct whack!

```
score is: 1, round count is 2
capturing frames...
random led is: 5
Mole is on 12-wack
amount of frames is 37
Predicted class: 01-wack
Model is 99.74% sure about this prediction.
Predicted class: 01-wack
Model is 83.84% sure about this prediction.
Predicted class: 02-wack
Model is 52.93% sure about this prediction.
Predicted class: 01-wack
Model is 69.60% sure about this prediction.
Predicted class: 02-wack
Model is 85.86% sure about this prediction.
Predicted class: 02-wack
Model is 94.38% sure about this prediction.
Predicted class: 02-wack
Model is 99.01% sure about this prediction.
Predicted class: 01-wack
Model is 74.02% sure about this prediction.
Predicted class: 02-wack
Model is 50.78% sure about this prediction.
Predicted class: 01-wack
Model is 63.71% sure about this prediction.
Predicted class: 02-wack
Model is 64.51% sure about this prediction.
Predicted class: 02-wack
Model is 87.99% sure about this prediction.
Predicted class: 02-wack
Model is 88.65% sure about this prediction.
Predicted class: 02-wack
Model is 90.10% sure about this prediction.
Predicted class: 02-wack
Model is 58.15% sure about this prediction.
Predicted class: 02-wack
Model is 73.53% sure about this prediction.
Predicted class: 02-wack
Model is 90.50% sure about this prediction.
Predicted class: 02-wack
Model is 82.96% sure about this prediction.
Predicted class: 02-wack
Model is 93.82% sure about this prediction.
Predicted class: 02-wack
Model is 85.16% sure about this prediction.
Predicted class: 02-wack
Model is 87.35% sure about this prediction.
Predicted class: 02-wack
Model is 83.89% sure about this prediction.
Predicted class: 02-wack
```

```
Model is 80.72% sure about this prediction.  
Predicted class: 02-wack  
Model is 96.14% sure about this prediction.  
Predicted class: 02-wack  
Model is 96.18% sure about this prediction.  
Predicted class: 02-wack  
Model is 92.87% sure about this prediction.  
Predicted class: 02-wack  
Model is 92.77% sure about this prediction.  
Predicted class: 02-wack  
Model is 93.90% sure about this prediction.  
Predicted class: 02-wack  
Model is 93.06% sure about this prediction.  
Predicted class: 02-wack  
Model is 96.89% sure about this prediction.  
Predicted class: 02-wack  
Model is 94.84% sure about this prediction.  
Predicted class: 02-wack  
Model is 95.59% sure about this prediction.  
Predicted class: 02-wack  
Model is 96.85% sure about this prediction.  
Predicted class: 02-wack  
Model is 95.54% sure about this prediction.  
Predicted class: 02-wack  
Model is 96.26% sure about this prediction.  
Predicted class: 02-wack  
Model is 97.86% sure about this prediction.  
Predicted class: 02-wack  
Model is 98.97% sure about this prediction.  
Miss!
```

```
score is: 1, round count is 3  
capturing frames...  
random led is: 2  
Mole is on 02-wack  
amount of frames is 34  
Predicted class: 02-wack  
Model is 97.85% sure about this prediction.  
Predicted class: 02-wack  
Model is 96.84% sure about this prediction.  
Predicted class: 02-wack  
Model is 97.10% sure about this prediction.  
Predicted class: 02-wack  
Model is 97.93% sure about this prediction.  
Predicted class: 02-wack  
Model is 97.54% sure about this prediction.  
Predicted class: 02-wack  
Model is 98.20% sure about this prediction.  
Predicted class: 02-wack  
Model is 96.56% sure about this prediction.  
Predicted class: 02-wack  
Model is 83.64% sure about this prediction.  
Predicted class: 02-wack
```

Model is 95.67% sure about this prediction.
Predicted class: 02-wack
Model is 81.59% sure about this prediction.
Predicted class: 02-wack
Model is 89.92% sure about this prediction.
Predicted class: 02-wack
Model is 78.00% sure about this prediction.
Predicted class: 02-wack
Model is 85.79% sure about this prediction.
Predicted class: 01-wack
Model is 91.20% sure about this prediction.
Predicted class: 01-wack
Model is 97.82% sure about this prediction.
Predicted class: 01-wack
Model is 99.36% sure about this prediction.
Predicted class: 01-wack
Model is 95.58% sure about this prediction.
Predicted class: 01-wack
Model is 99.63% sure about this prediction.
Predicted class: 01-wack
Model is 84.65% sure about this prediction.
Predicted class: 01-wack
Model is 77.96% sure about this prediction.
Predicted class: 01-wack
Model is 98.51% sure about this prediction.
Predicted class: 01-wack
Model is 98.78% sure about this prediction.
Predicted class: 01-wack
Model is 99.83% sure about this prediction.
Predicted class: 01-wack
Model is 99.72% sure about this prediction.
Predicted class: 01-wack
Model is 99.73% sure about this prediction.
Predicted class: 01-wack
Model is 99.04% sure about this prediction.
Predicted class: 01-wack
Model is 98.46% sure about this prediction.
Predicted class: 01-wack
Model is 97.11% sure about this prediction.
Predicted class: 01-wack
Model is 98.40% sure about this prediction.
Predicted class: 01-wack
Model is 99.36% sure about this prediction.
Predicted class: 01-wack
Model is 99.57% sure about this prediction.
Predicted class: 01-wack
Model is 99.79% sure about this prediction.
Predicted class: 01-wack
Model is 98.50% sure about this prediction.
Predicted class: 01-wack
Model is 98.99% sure about this prediction.
Correct whack!

```
score is: 2, round count is 4
capturing frames...
random led is: 5
Mole is on 12-wack
amount of frames is 36
Predicted class: 01-wack
Model is 99.83% sure about this prediction.
Predicted class: 01-wack
Model is 98.90% sure about this prediction.
Predicted class: 01-wack
Model is 99.52% sure about this prediction.
Predicted class: 01-wack
Model is 99.66% sure about this prediction.
Predicted class: 01-wack
Model is 99.89% sure about this prediction.
Predicted class: 01-wack
Model is 99.85% sure about this prediction.
Predicted class: 01-wack
Model is 99.26% sure about this prediction.
Predicted class: 01-wack
Model is 90.28% sure about this prediction.
Predicted class: 01-wack
Model is 52.56% sure about this prediction.
Predicted class: 01-wack
Model is 83.22% sure about this prediction.
Predicted class: 01-wack
Model is 81.51% sure about this prediction.
Predicted class: 02-wack
Model is 98.42% sure about this prediction.
Predicted class: 02-wack
Model is 64.31% sure about this prediction.
Predicted class: 01-wack
Model is 55.53% sure about this prediction.
Predicted class: 02-wack
Model is 61.98% sure about this prediction.
Predicted class: 02-wack
Model is 67.97% sure about this prediction.
Predicted class: 02-wack
Model is 87.51% sure about this prediction.
Predicted class: 02-wack
Model is 75.56% sure about this prediction.
Predicted class: 02-wack
Model is 71.42% sure about this prediction.
Predicted class: 02-wack
Model is 78.22% sure about this prediction.
Predicted class: 02-wack
Model is 69.65% sure about this prediction.
Predicted class: 02-wack
Model is 78.28% sure about this prediction.
Predicted class: 02-wack
Model is 93.98% sure about this prediction.
Predicted class: 02-wack
Model is 97.34% sure about this prediction.
Predicted class: 02-wack
```

```
Model is 95.79% sure about this prediction.  
Predicted class: 02-wack  
Model is 91.06% sure about this prediction.  
Predicted class: 02-wack  
Model is 94.31% sure about this prediction.  
Predicted class: 02-wack  
Model is 93.30% sure about this prediction.  
Predicted class: 02-wack  
Model is 90.96% sure about this prediction.  
Predicted class: 02-wack  
Model is 96.06% sure about this prediction.  
Predicted class: 02-wack  
Model is 96.28% sure about this prediction.  
Predicted class: 02-wack  
Model is 92.97% sure about this prediction.  
Predicted class: 02-wack  
Model is 95.62% sure about this prediction.  
Predicted class: 02-wack  
Model is 95.49% sure about this prediction.  
Predicted class: 02-wack  
Model is 93.96% sure about this prediction.  
Predicted class: 02-wack  
Model is 98.18% sure about this prediction.  
Miss!
```

```
score is: 2, round count is 5
```

Code 24: Model one test two

```
laris@raspberrypi:~/Desktop/whackamole $ python game.py  
starting the game  
capturing frames...  
random led is: 3  
Mole is on 10-wack  
amount of frames is 20  
Predicted class: 02-wack  
Model is 74.85% sure about this prediction.  
Predicted class: 02-wack  
Model is 57.10% sure about this prediction.  
Predicted class: 01-wack  
Model is 86.35% sure about this prediction.  
Predicted class: 01-wack  
Model is 79.72% sure about this prediction.  
Predicted class: 01-wack  
Model is 82.14% sure about this prediction.  
Predicted class: 01-wack  
Model is 70.37% sure about this prediction.  
Predicted class: 01-wack  
Model is 76.28% sure about this prediction.  
Predicted class: 01-wack  
Model is 70.48% sure about this prediction.  
Predicted class: 01-wack
```

```
Model is 74.03% sure about this prediction.  
Predicted class: 01-wack  
Model is 84.39% sure about this prediction.  
Predicted class: 01-wack  
Model is 82.64% sure about this prediction.  
Predicted class: 01-wack  
Model is 85.78% sure about this prediction.  
Predicted class: 01-wack  
Model is 87.19% sure about this prediction.  
Predicted class: 01-wack  
Model is 96.42% sure about this prediction.  
Predicted class: 01-wack  
Model is 82.12% sure about this prediction.  
Predicted class: 01-wack  
Model is 85.33% sure about this prediction.  
Predicted class: 01-wack  
Model is 89.38% sure about this prediction.  
Predicted class: 01-wack  
Model is 81.96% sure about this prediction.  
Predicted class: 01-wack  
Model is 75.09% sure about this prediction.  
Predicted class: 01-wack  
Model is 90.83% sure about this prediction.  
Miss!
```

```
score is: 0, round count is 1  
capturing frames...  
random led is: 5  
Mole is on 12-wack  
amount of frames is 33  
Predicted class: 01-wack  
Model is 93.55% sure about this prediction.  
Predicted class: 01-wack  
Model is 95.23% sure about this prediction.  
Predicted class: 01-wack  
Model is 94.98% sure about this prediction.  
Predicted class: 01-wack  
Model is 93.77% sure about this prediction.  
Predicted class: 01-wack  
Model is 89.14% sure about this prediction.  
Predicted class: 01-wack  
Model is 95.61% sure about this prediction.  
Predicted class: 01-wack  
Model is 94.18% sure about this prediction.  
Predicted class: 01-wack  
Model is 94.46% sure about this prediction.  
Predicted class: 01-wack  
Model is 95.50% sure about this prediction.  
Predicted class: 01-wack  
Model is 96.65% sure about this prediction.  
Predicted class: 01-wack  
Model is 97.19% sure about this prediction.  
Predicted class: 01-wack
```

Model is 97.05% sure about this prediction.
Predicted class: 01-wack
Model is 97.23% sure about this prediction.
Predicted class: 02-wack
Model is 59.70% sure about this prediction.
Predicted class: 02-wack
Model is 62.44% sure about this prediction.
Predicted class: 02-wack
Model is 65.45% sure about this prediction.
Predicted class: 02-wack
Model is 52.97% sure about this prediction.
Predicted class: 02-wack
Model is 54.51% sure about this prediction.
Predicted class: 02-wack
Model is 70.70% sure about this prediction.
Predicted class: 02-wack
Model is 46.41% sure about this prediction.
Predicted class: 02-wack
Model is 76.48% sure about this prediction.
Predicted class: 02-wack
Model is 85.66% sure about this prediction.
Predicted class: 02-wack
Model is 94.44% sure about this prediction.
Predicted class: 02-wack
Model is 87.38% sure about this prediction.
Predicted class: 02-wack
Model is 93.49% sure about this prediction.
Predicted class: 02-wack
Model is 90.47% sure about this prediction.
Predicted class: 02-wack
Model is 87.70% sure about this prediction.
Predicted class: 02-wack
Model is 80.84% sure about this prediction.
Predicted class: 02-wack
Model is 88.08% sure about this prediction.
Predicted class: 02-wack
Model is 84.39% sure about this prediction.
Predicted class: 02-wack
Model is 85.21% sure about this prediction.
Predicted class: 02-wack
Model is 89.05% sure about this prediction.
Predicted class: 02-wack
Model is 88.81% sure about this prediction.
Miss!

score is: 0, round count is 2
capturing frames...
random led is: 1
Mole is on 01-wack
amount of frames is 35
Predicted class: 02-wack
Model is 94.45% sure about this prediction.
Predicted class: 02-wack

Model is 95.47% sure about this prediction.
Predicted class: 02-wack
Model is 93.76% sure about this prediction.
Predicted class: 02-wack
Model is 97.56% sure about this prediction.
Predicted class: 02-wack
Model is 86.66% sure about this prediction.
Predicted class: 02-wack
Model is 66.99% sure about this prediction.
Predicted class: 01-wack
Model is 64.07% sure about this prediction.
Predicted class: 02-wack
Model is 51.28% sure about this prediction.
Predicted class: 02-wack
Model is 56.71% sure about this prediction.
Predicted class: 02-wack
Model is 79.87% sure about this prediction.
Predicted class: 02-wack
Model is 56.20% sure about this prediction.
Predicted class: 01-wack
Model is 59.36% sure about this prediction.
Predicted class: 01-wack
Model is 76.35% sure about this prediction.
Predicted class: 01-wack
Model is 56.38% sure about this prediction.
Predicted class: 02-wack
Model is 85.90% sure about this prediction.
Predicted class: 02-wack
Model is 65.84% sure about this prediction.
Predicted class: 01-wack
Model is 54.63% sure about this prediction.
Predicted class: 01-wack
Model is 95.83% sure about this prediction.
Predicted class: 02-wack
Model is 91.76% sure about this prediction.
Predicted class: 01-wack
Model is 84.81% sure about this prediction.
Predicted class: 01-wack
Model is 96.89% sure about this prediction.
Predicted class: 01-wack
Model is 92.14% sure about this prediction.
Predicted class: 01-wack
Model is 93.40% sure about this prediction.
Predicted class: 01-wack
Model is 97.50% sure about this prediction.
Predicted class: 01-wack
Model is 92.61% sure about this prediction.
Predicted class: 01-wack
Model is 83.25% sure about this prediction.
Predicted class: 01-wack
Model is 65.40% sure about this prediction.
Predicted class: 01-wack
Model is 73.10% sure about this prediction.
Predicted class: 01-wack

```
Model is 55.83% sure about this prediction.  
Predicted class: 01-wack  
Model is 67.44% sure about this prediction.  
Predicted class: 02-wack  
Model is 52.12% sure about this prediction.  
Predicted class: 02-wack  
Model is 64.14% sure about this prediction.  
Predicted class: 01-wack  
Model is 60.62% sure about this prediction.  
Predicted class: 01-wack  
Model is 50.18% sure about this prediction.  
Predicted class: 02-wack  
Model is 59.14% sure about this prediction.  
Correct whack!
```

```
score is: 1, round count is 3  
capturing frames...  
random led is: 5  
Mole is on 12-wack  
amount of frames is 38  
Predicted class: 01-wack  
Model is 86.18% sure about this prediction.  
Predicted class: 01-wack  
Model is 86.50% sure about this prediction.  
Predicted class: 01-wack  
Model is 78.79% sure about this prediction.  
Predicted class: 01-wack  
Model is 89.82% sure about this prediction.  
Predicted class: 01-wack  
Model is 82.36% sure about this prediction.  
Predicted class: 01-wack  
Model is 75.82% sure about this prediction.  
Predicted class: 01-wack  
Model is 89.49% sure about this prediction.  
Predicted class: 02-wack  
Model is 81.80% sure about this prediction.  
Predicted class: 02-wack  
Model is 99.19% sure about this prediction.  
Predicted class: 02-wack  
Model is 88.45% sure about this prediction.  
Predicted class: 01-wack  
Model is 51.15% sure about this prediction.  
Predicted class: 01-wack  
Model is 63.70% sure about this prediction.  
Predicted class: 01-wack  
Model is 82.13% sure about this prediction.  
Predicted class: 02-wack  
Model is 56.13% sure about this prediction.  
Predicted class: 02-wack  
Model is 72.28% sure about this prediction.  
Predicted class: 02-wack  
Model is 61.77% sure about this prediction.  
Predicted class: 02-wack
```

Model is 54.13% sure about this prediction.
Predicted class: 02-wack
Model is 56.93% sure about this prediction.
Predicted class: 02-wack
Model is 60.96% sure about this prediction.
Predicted class: 02-wack
Model is 56.84% sure about this prediction.
Predicted class: 02-wack
Model is 84.05% sure about this prediction.
Predicted class: 02-wack
Model is 74.69% sure about this prediction.
Predicted class: 02-wack
Model is 75.44% sure about this prediction.
Predicted class: 02-wack
Model is 87.36% sure about this prediction.
Predicted class: 02-wack
Model is 63.56% sure about this prediction.
Predicted class: 02-wack
Model is 87.11% sure about this prediction.
Predicted class: 02-wack
Model is 83.10% sure about this prediction.
Predicted class: 02-wack
Model is 64.94% sure about this prediction.
Predicted class: 02-wack
Model is 59.60% sure about this prediction.
Predicted class: 02-wack
Model is 64.92% sure about this prediction.
Predicted class: 02-wack
Model is 80.45% sure about this prediction.
Predicted class: 02-wack
Model is 69.81% sure about this prediction.
Predicted class: 02-wack
Model is 78.33% sure about this prediction.
Predicted class: 02-wack
Model is 74.03% sure about this prediction.
Predicted class: 02-wack
Model is 84.80% sure about this prediction.
Predicted class: 02-wack
Model is 80.36% sure about this prediction.
Predicted class: 02-wack
Model is 76.75% sure about this prediction.
Predicted class: 02-wack
Model is 74.42% sure about this prediction.
Miss!

score is: 1, round count is 4
capturing frames...
random led is: 1
Mole is on 01-wack
amount of frames is 39
Predicted class: 02-wack
Model is 89.46% sure about this prediction.
Predicted class: 02-wack

Model is 92.32% sure about this prediction.
Predicted class: 02-wack
Model is 96.40% sure about this prediction.
Predicted class: 02-wack
Model is 90.90% sure about this prediction.
Predicted class: 02-wack
Model is 84.63% sure about this prediction.
Predicted class: 02-wack
Model is 75.67% sure about this prediction.
Predicted class: 02-wack
Model is 70.45% sure about this prediction.
Predicted class: 02-wack
Model is 52.83% sure about this prediction.
Predicted class: 02-wack
Model is 69.64% sure about this prediction.
Predicted class: 02-wack
Model is 48.77% sure about this prediction.
Predicted class: 02-wack
Model is 73.00% sure about this prediction.
Predicted class: 01-wack
Model is 49.85% sure about this prediction.
Predicted class: 02-wack
Model is 72.97% sure about this prediction.
Predicted class: 02-wack
Model is 95.73% sure about this prediction.
Predicted class: 02-wack
Model is 81.49% sure about this prediction.
Predicted class: 02-wack
Model is 94.40% sure about this prediction.
Predicted class: 02-wack
Model is 80.99% sure about this prediction.
Predicted class: 02-wack
Model is 61.90% sure about this prediction.
Predicted class: 02-wack
Model is 65.39% sure about this prediction.
Predicted class: 01-wack
Model is 82.37% sure about this prediction.
Predicted class: 02-wack
Model is 88.90% sure about this prediction.
Predicted class: 01-wack
Model is 92.41% sure about this prediction.
Predicted class: 01-wack
Model is 71.37% sure about this prediction.
Predicted class: 02-wack
Model is 51.56% sure about this prediction.
Predicted class: 01-wack
Model is 92.43% sure about this prediction.
Predicted class: 01-wack
Model is 87.24% sure about this prediction.
Predicted class: 01-wack
Model is 90.58% sure about this prediction.
Predicted class: 01-wack
Model is 96.24% sure about this prediction.
Predicted class: 01-wack

```
Model is 85.98% sure about this prediction.  
Predicted class: 02-wack  
Model is 51.08% sure about this prediction.  
Predicted class: 01-wack  
Model is 64.86% sure about this prediction.  
Predicted class: 01-wack  
Model is 96.55% sure about this prediction.  
Predicted class: 01-wack  
Model is 80.70% sure about this prediction.  
Predicted class: 01-wack  
Model is 86.60% sure about this prediction.  
Predicted class: 02-wack  
Model is 52.46% sure about this prediction.  
Predicted class: 01-wack  
Model is 62.90% sure about this prediction.  
Predicted class: 01-wack  
Model is 65.33% sure about this prediction.  
Predicted class: 01-wack  
Model is 75.49% sure about this prediction.  
Predicted class: 01-wack  
Model is 87.07% sure about this prediction.  
Correct whack!
```

```
score is: 2, round count is 5
```

Code 25: Model one test three

```
laris@raspberrypi:~/Desktop/whackamole $ python game.py  
WARNING:absl:Compiled the loaded model, but the compiled metrics have yet to be built. `model.compile()  
starting the game  
capturing frames...  
random led is: 2  
Mole is on 02-wack  
amount of frames is 20  
Predicted class: 01-wack  
Model is 78.10% sure about this prediction.  
Predicted class: 01-wack  
Model is 95.36% sure about this prediction.  
Predicted class: 01-wack  
Model is 99.66% sure about this prediction.  
Predicted class: 01-wack  
Model is 92.56% sure about this prediction.  
Predicted class: 01-wack  
Model is 83.78% sure about this prediction.  
Predicted class: 01-wack  
Model is 99.22% sure about this prediction.  
Predicted class: 01-wack  
Model is 99.96% sure about this prediction.  
Predicted class: 01-wack  
Model is 99.92% sure about this prediction.  
Predicted class: 01-wack  
Model is 99.92% sure about this prediction.
```

```
Predicted class: 01-wack
Model is 99.99% sure about this prediction.
Predicted class: 01-wack
Model is 99.80% sure about this prediction.
Predicted class: 01-wack
Model is 98.72% sure about this prediction.
Predicted class: 01-wack
Model is 99.07% sure about this prediction.
Predicted class: 01-wack
Model is 97.72% sure about this prediction.
Predicted class: 01-wack
Model is 97.10% sure about this prediction.
Predicted class: 01-wack
Model is 98.08% sure about this prediction.
Predicted class: 01-wack
Model is 97.89% sure about this prediction.
Predicted class: 01-wack
Model is 97.39% sure about this prediction.
Predicted class: 01-wack
Model is 97.98% sure about this prediction.
Predicted class: 01-wack
Model is 99.22% sure about this prediction.
Miss!
```

```
score is: 0, round count is 1
capturing frames...
random led is: 2
Mole is on 02-wack
amount of frames is 48
Predicted class: 01-wack
Model is 99.87% sure about this prediction.
Predicted class: 01-wack
Model is 89.09% sure about this prediction.
Predicted class: 01-wack
Model is 76.42% sure about this prediction.
Predicted class: 01-wack
Model is 90.49% sure about this prediction.
Predicted class: 01-wack
Model is 83.45% sure about this prediction.
Predicted class: 01-wack
Model is 94.23% sure about this prediction.
Predicted class: 02-wack
Model is 73.37% sure about this prediction.
Predicted class: 02-wack
Model is 83.88% sure about this prediction.
Predicted class: 01-wack
Model is 61.06% sure about this prediction.
Predicted class: 02-wack
Model is 78.52% sure about this prediction.
Predicted class: 02-wack
Model is 58.27% sure about this prediction.
Predicted class: 02-wack
Model is 73.25% sure about this prediction.
```

Predicted class: 02-wack
Model is 72.33% sure about this prediction.
Predicted class: 02-wack
Model is 70.67% sure about this prediction.
Predicted class: 02-wack
Model is 66.07% sure about this prediction.
Predicted class: 02-wack
Model is 82.61% sure about this prediction.
Predicted class: 02-wack
Model is 58.72% sure about this prediction.
Predicted class: 02-wack
Model is 90.10% sure about this prediction.
Predicted class: 02-wack
Model is 82.88% sure about this prediction.
Predicted class: 02-wack
Model is 82.58% sure about this prediction.
Predicted class: 02-wack
Model is 92.02% sure about this prediction.
Predicted class: 02-wack
Model is 73.02% sure about this prediction.
Predicted class: 02-wack
Model is 67.95% sure about this prediction.
Predicted class: 02-wack
Model is 67.00% sure about this prediction.
Predicted class: 02-wack
Model is 73.24% sure about this prediction.
Predicted class: 02-wack
Model is 85.59% sure about this prediction.
Predicted class: 02-wack
Model is 81.59% sure about this prediction.
Predicted class: 02-wack
Model is 93.37% sure about this prediction.
Predicted class: 02-wack
Model is 90.86% sure about this prediction.
Predicted class: 01-wack
Model is 89.60% sure about this prediction.
Predicted class: 01-wack
Model is 97.98% sure about this prediction.
Predicted class: 01-wack
Model is 98.97% sure about this prediction.
Predicted class: 01-wack
Model is 85.56% sure about this prediction.
Predicted class: 01-wack
Model is 99.46% sure about this prediction.
Predicted class: 01-wack
Model is 94.70% sure about this prediction.
Predicted class: 01-wack
Model is 80.37% sure about this prediction.
Predicted class: 01-wack
Model is 99.90% sure about this prediction.
Predicted class: 01-wack
Model is 99.94% sure about this prediction.
Predicted class: 01-wack
Model is 99.96% sure about this prediction.

```
Predicted class: 01-wack
Model is 99.94% sure about this prediction.
Predicted class: 01-wack
Model is 99.59% sure about this prediction.
Predicted class: 01-wack
Model is 99.39% sure about this prediction.
Predicted class: 01-wack
Model is 99.84% sure about this prediction.
Predicted class: 01-wack
Model is 99.72% sure about this prediction.
Predicted class: 01-wack
Model is 99.78% sure about this prediction.
Predicted class: 01-wack
Model is 98.90% sure about this prediction.
Predicted class: 01-wack
Model is 99.19% sure about this prediction.
Predicted class: 01-wack
Model is 99.87% sure about this prediction.
Correct whack!
```

```
score is: 1, round count is 2
capturing frames...
random led is: 3
Mole is on 10-wack
amount of frames is 48
Predicted class: 01-wack
Model is 99.46% sure about this prediction.
Predicted class: 01-wack
Model is 99.71% sure about this prediction.
Predicted class: 01-wack
Model is 98.87% sure about this prediction.
Predicted class: 01-wack
Model is 99.47% sure about this prediction.
Predicted class: 01-wack
Model is 92.43% sure about this prediction.
Predicted class: 01-wack
Model is 86.17% sure about this prediction.
Predicted class: 01-wack
Model is 94.81% sure about this prediction.
Predicted class: 02-wack
Model is 80.23% sure about this prediction.
Predicted class: 02-wack
Model is 98.48% sure about this prediction.
Predicted class: 01-wack
Model is 39.16% sure about this prediction.
Predicted class: 01-wack
Model is 66.60% sure about this prediction.
Predicted class: 01-wack
Model is 72.29% sure about this prediction.
Predicted class: 02-wack
Model is 56.52% sure about this prediction.
Predicted class: 02-wack
Model is 59.62% sure about this prediction.
```

Predicted class: 02-wack
Model is 66.44% sure about this prediction.
Predicted class: 02-wack
Model is 61.85% sure about this prediction.
Predicted class: 02-wack
Model is 52.87% sure about this prediction.
Predicted class: 01-wack
Model is 57.31% sure about this prediction.
Predicted class: 02-wack
Model is 76.40% sure about this prediction.
Predicted class: 02-wack
Model is 75.15% sure about this prediction.
Predicted class: 01-wack
Model is 50.35% sure about this prediction.
Predicted class: 02-wack
Model is 73.16% sure about this prediction.
Predicted class: 02-wack
Model is 68.54% sure about this prediction.
Predicted class: 02-wack
Model is 64.37% sure about this prediction.
Predicted class: 02-wack
Model is 58.69% sure about this prediction.
Predicted class: 02-wack
Model is 67.17% sure about this prediction.
Predicted class: 02-wack
Model is 68.42% sure about this prediction.
Predicted class: 01-wack
Model is 55.40% sure about this prediction.
Predicted class: 02-wack
Model is 65.07% sure about this prediction.
Predicted class: 02-wack
Model is 65.27% sure about this prediction.
Predicted class: 02-wack
Model is 82.63% sure about this prediction.
Predicted class: 02-wack
Model is 81.68% sure about this prediction.
Predicted class: 02-wack
Model is 76.06% sure about this prediction.
Predicted class: 02-wack
Model is 78.95% sure about this prediction.
Predicted class: 02-wack
Model is 85.85% sure about this prediction.
Predicted class: 02-wack
Model is 75.51% sure about this prediction.
Predicted class: 02-wack
Model is 53.80% sure about this prediction.
Predicted class: 02-wack
Model is 76.32% sure about this prediction.
Predicted class: 02-wack
Model is 76.83% sure about this prediction.
Predicted class: 02-wack
Model is 76.61% sure about this prediction.
Predicted class: 02-wack
Model is 53.88% sure about this prediction.

```
Predicted class: 02-wack
Model is 72.60% sure about this prediction.
Predicted class: 02-wack
Model is 76.50% sure about this prediction.
Predicted class: 02-wack
Model is 87.55% sure about this prediction.
Predicted class: 02-wack
Model is 65.00% sure about this prediction.
Predicted class: 02-wack
Model is 87.93% sure about this prediction.
Predicted class: 02-wack
Model is 65.17% sure about this prediction.
Predicted class: 02-wack
Model is 86.67% sure about this prediction.
Miss!
```

```
score is: 1, round count is 3
capturing frames...
random led is: 0
Mole is on 00-wack
amount of frames is 48
Predicted class: 02-wack
Model is 79.35% sure about this prediction.
Predicted class: 01-wack
Model is 77.52% sure about this prediction.
Predicted class: 02-wack
Model is 57.05% sure about this prediction.
Predicted class: 01-wack
Model is 81.34% sure about this prediction.
Predicted class: 01-wack
Model is 83.57% sure about this prediction.
Predicted class: 01-wack
Model is 81.77% sure about this prediction.
Predicted class: 01-wack
Model is 88.52% sure about this prediction.
Predicted class: 01-wack
Model is 76.20% sure about this prediction.
Predicted class: 01-wack
Model is 84.64% sure about this prediction.
Predicted class: 01-wack
Model is 91.60% sure about this prediction.
Predicted class: 01-wack
Model is 87.31% sure about this prediction.
Predicted class: 01-wack
Model is 86.92% sure about this prediction.
Predicted class: 01-wack
Model is 87.69% sure about this prediction.
Predicted class: 01-wack
Model is 87.77% sure about this prediction.
Predicted class: 01-wack
Model is 79.38% sure about this prediction.
Predicted class: 01-wack
Model is 69.43% sure about this prediction.
```

Predicted class: 01-wack
Model is 87.11% sure about this prediction.
Predicted class: 01-wack
Model is 80.81% sure about this prediction.
Predicted class: 01-wack
Model is 87.56% sure about this prediction.
Predicted class: 01-wack
Model is 89.37% sure about this prediction.
Predicted class: 01-wack
Model is 92.62% sure about this prediction.
Predicted class: 01-wack
Model is 90.67% sure about this prediction.
Predicted class: 01-wack
Model is 81.82% sure about this prediction.
Predicted class: 01-wack
Model is 89.32% sure about this prediction.
Predicted class: 01-wack
Model is 80.06% sure about this prediction.
Predicted class: 01-wack
Model is 79.34% sure about this prediction.
Predicted class: 01-wack
Model is 65.51% sure about this prediction.
Predicted class: 01-wack
Model is 75.06% sure about this prediction.
Predicted class: 01-wack
Model is 74.75% sure about this prediction.
Predicted class: 01-wack
Model is 79.89% sure about this prediction.
Predicted class: 01-wack
Model is 86.15% sure about this prediction.
Predicted class: 01-wack
Model is 82.49% sure about this prediction.
Predicted class: 01-wack
Model is 70.35% sure about this prediction.
Predicted class: 01-wack
Model is 67.01% sure about this prediction.
Predicted class: 01-wack
Model is 67.60% sure about this prediction.
Predicted class: 01-wack
Model is 76.93% sure about this prediction.
Predicted class: 01-wack
Model is 52.86% sure about this prediction.
Predicted class: 02-wack
Model is 67.66% sure about this prediction.
Predicted class: 01-wack
Model is 50.63% sure about this prediction.
Predicted class: 00-wack
Model is 52.99% sure about this prediction.
Predicted class: 02-wack
Model is 72.12% sure about this prediction.
Predicted class: 01-wack
Model is 55.54% sure about this prediction.
Predicted class: 01-wack
Model is 80.40% sure about this prediction.

```
Predicted class: 02-wack
Model is 60.63% sure about this prediction.
Predicted class: 01-wack
Model is 93.27% sure about this prediction.
Predicted class: 01-wack
Model is 57.48% sure about this prediction.
Predicted class: 01-wack
Model is 69.20% sure about this prediction.
Predicted class: 02-wack
Model is 69.05% sure about this prediction.
Miss!
```

```
score is: 1, round count is 4
capturing frames...
random led is: 1
Mole is on 01-wack
amount of frames is 49
Predicted class: 02-wack
Model is 51.99% sure about this prediction.
Predicted class: 02-wack
Model is 64.36% sure about this prediction.
Predicted class: 02-wack
Model is 73.63% sure about this prediction.
Predicted class: 02-wack
Model is 71.17% sure about this prediction.
Predicted class: 01-wack
Model is 58.66% sure about this prediction.
Predicted class: 02-wack
Model is 67.59% sure about this prediction.
Predicted class: 00-wack
Model is 43.30% sure about this prediction.
Predicted class: 00-wack
Model is 51.75% sure about this prediction.
Predicted class: 02-wack
Model is 50.99% sure about this prediction.
Predicted class: 00-wack
Model is 74.96% sure about this prediction.
Predicted class: 02-wack
Model is 46.00% sure about this prediction.
Predicted class: 02-wack
Model is 38.15% sure about this prediction.
Predicted class: 01-wack
Model is 72.08% sure about this prediction.
Predicted class: 01-wack
Model is 58.59% sure about this prediction.
Predicted class: 01-wack
Model is 59.75% sure about this prediction.
Predicted class: 01-wack
Model is 51.67% sure about this prediction.
Predicted class: 01-wack
Model is 73.14% sure about this prediction.
Predicted class: 01-wack
Model is 43.14% sure about this prediction.
```

Predicted class: 01-wack
Model is 41.25% sure about this prediction.
Predicted class: 01-wack
Model is 58.61% sure about this prediction.
Predicted class: 01-wack
Model is 47.43% sure about this prediction.
Predicted class: 01-wack
Model is 59.81% sure about this prediction.
Predicted class: 01-wack
Model is 55.34% sure about this prediction.
Predicted class: 00-wack
Model is 40.79% sure about this prediction.
Predicted class: 00-wack
Model is 42.35% sure about this prediction.
Predicted class: 00-wack
Model is 60.47% sure about this prediction.
Predicted class: 00-wack
Model is 72.79% sure about this prediction.
Predicted class: 00-wack
Model is 69.73% sure about this prediction.
Predicted class: 00-wack
Model is 63.15% sure about this prediction.
Predicted class: 00-wack
Model is 87.72% sure about this prediction.
Predicted class: 00-wack
Model is 77.67% sure about this prediction.
Predicted class: 00-wack
Model is 64.21% sure about this prediction.
Predicted class: 00-wack
Model is 51.39% sure about this prediction.
Predicted class: 00-wack
Model is 70.54% sure about this prediction.
Predicted class: 00-wack
Model is 75.59% sure about this prediction.
Predicted class: 00-wack
Model is 56.28% sure about this prediction.
Predicted class: 00-wack
Model is 72.27% sure about this prediction.
Predicted class: 00-wack
Model is 48.29% sure about this prediction.
Predicted class: 01-wack
Model is 40.36% sure about this prediction.
Predicted class: 00-wack
Model is 38.71% sure about this prediction.
Predicted class: 01-wack
Model is 51.56% sure about this prediction.
Predicted class: 01-wack
Model is 36.19% sure about this prediction.
Predicted class: 01-wack
Model is 44.42% sure about this prediction.
Predicted class: 00-wack
Model is 39.29% sure about this prediction.
Predicted class: 00-wack
Model is 61.09% sure about this prediction.

```
Predicted class: 01-wack
Model is 42.87% sure about this prediction.
Predicted class: 00-wack
Model is 46.13% sure about this prediction.
Predicted class: 01-wack
Model is 43.07% sure about this prediction.
Predicted class: 01-wack
Model is 42.95% sure about this prediction.
Correct whack!
```

```
score is: 2, round count is 5
```

Code 26: Model one test four

```
laris@raspberrypi:~/Desktop/whackamole $ python game.py
WARNING:absl:Compiled the loaded model, but the compiled metrics have yet to be built. `model.compile_` starting the game
capturing frames...
random led is: 4
Mole is on 11-wack
amount of frames is 20
Predicted class: 02-wack
Model is 84.18% sure about this prediction.
Predicted class: 02-wack
Model is 49.04% sure about this prediction.
Predicted class: 01-wack
Model is 70.28% sure about this prediction.
Predicted class: 02-wack
Model is 76.32% sure about this prediction.
Predicted class: 01-wack
Model is 49.34% sure about this prediction.
Predicted class: 02-wack
Model is 86.74% sure about this prediction.
Predicted class: 02-wack
Model is 80.20% sure about this prediction.
Predicted class: 02-wack
Model is 89.59% sure about this prediction.
Predicted class: 02-wack
Model is 90.28% sure about this prediction.
Predicted class: 02-wack
Model is 83.59% sure about this prediction.
Predicted class: 02-wack
Model is 86.44% sure about this prediction.
Predicted class: 02-wack
Model is 89.53% sure about this prediction.
Predicted class: 02-wack
Model is 85.16% sure about this prediction.
Predicted class: 02-wack
Model is 83.78% sure about this prediction.
Predicted class: 02-wack
Model is 75.27% sure about this prediction.
Predicted class: 02-wack
Model is 89.16% sure about this prediction.
```

```
Predicted class: 02-wack
Model is 84.94% sure about this prediction.
Predicted class: 02-wack
Model is 78.03% sure about this prediction.
Predicted class: 02-wack
Model is 71.73% sure about this prediction.
Predicted class: 02-wack
Model is 77.83% sure about this prediction.
Miss!
```

```
score is: 0, round count is 1
capturing frames...
random led is: 3
Mole is on 10-wack
amount of frames is 33
Predicted class: 02-wack
Model is 87.46% sure about this prediction.
Predicted class: 02-wack
Model is 83.03% sure about this prediction.
Predicted class: 02-wack
Model is 83.25% sure about this prediction.
Predicted class: 02-wack
Model is 95.60% sure about this prediction.
Predicted class: 02-wack
Model is 89.19% sure about this prediction.
Predicted class: 02-wack
Model is 86.32% sure about this prediction.
Predicted class: 02-wack
Model is 90.12% sure about this prediction.
Predicted class: 02-wack
Model is 85.41% sure about this prediction.
Predicted class: 02-wack
Model is 91.79% sure about this prediction.
Predicted class: 02-wack
Model is 84.47% sure about this prediction.
Predicted class: 02-wack
Model is 92.29% sure about this prediction.
Predicted class: 02-wack
Model is 92.73% sure about this prediction.
Predicted class: 01-wack
Model is 53.32% sure about this prediction.
Predicted class: 01-wack
Model is 53.32% sure about this prediction.
Predicted class: 01-wack
Model is 79.75% sure about this prediction.
Predicted class: 02-wack
Model is 71.23% sure about this prediction.
Predicted class: 02-wack
Model is 85.47% sure about this prediction.
Predicted class: 01-wack
Model is 83.16% sure about this prediction.
Predicted class: 01-wack
Model is 68.11% sure about this prediction.
```

```
Predicted class: 01-wack
Model is 64.04% sure about this prediction.
Predicted class: 01-wack
Model is 78.79% sure about this prediction.
Predicted class: 01-wack
Model is 85.39% sure about this prediction.
Predicted class: 01-wack
Model is 84.55% sure about this prediction.
Predicted class: 01-wack
Model is 83.05% sure about this prediction.
Predicted class: 01-wack
Model is 82.77% sure about this prediction.
Predicted class: 01-wack
Model is 76.13% sure about this prediction.
Predicted class: 01-wack
Model is 89.16% sure about this prediction.
Predicted class: 01-wack
Model is 84.66% sure about this prediction.
Predicted class: 01-wack
Model is 92.12% sure about this prediction.
Predicted class: 01-wack
Model is 86.01% sure about this prediction.
Predicted class: 01-wack
Model is 80.65% sure about this prediction.
Predicted class: 01-wack
Model is 82.29% sure about this prediction.
Predicted class: 01-wack
Model is 88.96% sure about this prediction.
Miss!
```

```
score is: 0, round count is 2
capturing frames...
random led is: 3
Mole is on 10-wack
amount of frames is 48
Predicted class: 01-wack
Model is 86.05% sure about this prediction.
Predicted class: 01-wack
Model is 89.39% sure about this prediction.
Predicted class: 01-wack
Model is 95.05% sure about this prediction.
Predicted class: 01-wack
Model is 96.38% sure about this prediction.
Predicted class: 01-wack
Model is 96.48% sure about this prediction.
Predicted class: 01-wack
Model is 97.85% sure about this prediction.
Predicted class: 01-wack
Model is 94.89% sure about this prediction.
Predicted class: 01-wack
Model is 93.89% sure about this prediction.
Predicted class: 01-wack
Model is 91.56% sure about this prediction.
```

Predicted class: 01-wack
Model is 88.88% sure about this prediction.
Predicted class: 01-wack
Model is 85.70% sure about this prediction.
Predicted class: 01-wack
Model is 86.63% sure about this prediction.
Predicted class: 01-wack
Model is 85.14% sure about this prediction.
Predicted class: 02-wack
Model is 70.35% sure about this prediction.
Predicted class: 01-wack
Model is 67.02% sure about this prediction.
Predicted class: 01-wack
Model is 64.49% sure about this prediction.
Predicted class: 02-wack
Model is 89.77% sure about this prediction.
Predicted class: 01-wack
Model is 71.16% sure about this prediction.
Predicted class: 01-wack
Model is 52.12% sure about this prediction.
Predicted class: 02-wack
Model is 49.82% sure about this prediction.
Predicted class: 02-wack
Model is 81.15% sure about this prediction.
Predicted class: 02-wack
Model is 80.43% sure about this prediction.
Predicted class: 02-wack
Model is 81.31% sure about this prediction.
Predicted class: 02-wack
Model is 77.74% sure about this prediction.
Predicted class: 02-wack
Model is 67.69% sure about this prediction.
Predicted class: 02-wack
Model is 76.96% sure about this prediction.
Predicted class: 02-wack
Model is 78.14% sure about this prediction.
Predicted class: 02-wack
Model is 78.93% sure about this prediction.
Predicted class: 02-wack
Model is 90.31% sure about this prediction.
Predicted class: 02-wack
Model is 83.36% sure about this prediction.
Predicted class: 02-wack
Model is 83.36% sure about this prediction.
Predicted class: 02-wack
Model is 69.14% sure about this prediction.
Predicted class: 02-wack
Model is 81.50% sure about this prediction.
Predicted class: 02-wack
Model is 79.22% sure about this prediction.
Predicted class: 02-wack
Model is 86.68% sure about this prediction.
Predicted class: 02-wack
Model is 81.97% sure about this prediction.

```
Predicted class: 02-wack
Model is 79.04% sure about this prediction.
Predicted class: 02-wack
Model is 84.11% sure about this prediction.
Predicted class: 01-wack
Model is 91.23% sure about this prediction.
Predicted class: 02-wack
Model is 65.24% sure about this prediction.
Predicted class: 02-wack
Model is 54.87% sure about this prediction.
Predicted class: 01-wack
Model is 93.11% sure about this prediction.
Predicted class: 01-wack
Model is 98.23% sure about this prediction.
Predicted class: 01-wack
Model is 99.42% sure about this prediction.
Predicted class: 01-wack
Model is 97.76% sure about this prediction.
Predicted class: 01-wack
Model is 99.35% sure about this prediction.
Predicted class: 01-wack
Model is 98.63% sure about this prediction.
Predicted class: 01-wack
Model is 97.58% sure about this prediction.
Miss!
```

```
score is: 0, round count is 3
capturing frames...
random led is: 0
Mole is on 00-wack
amount of frames is 47
Predicted class: 01-wack
Model is 87.43% sure about this prediction.
Predicted class: 01-wack
Model is 89.43% sure about this prediction.
Predicted class: 01-wack
Model is 81.73% sure about this prediction.
Predicted class: 01-wack
Model is 92.29% sure about this prediction.
Predicted class: 01-wack
Model is 81.43% sure about this prediction.
Predicted class: 01-wack
Model is 84.89% sure about this prediction.
Predicted class: 01-wack
Model is 90.19% sure about this prediction.
Predicted class: 01-wack
Model is 86.64% sure about this prediction.
Predicted class: 01-wack
Model is 61.91% sure about this prediction.
Predicted class: 01-wack
Model is 87.40% sure about this prediction.
Predicted class: 01-wack
Model is 81.92% sure about this prediction.
```

Predicted class: 01-wack
Model is 79.17% sure about this prediction.
Predicted class: 01-wack
Model is 85.40% sure about this prediction.
Predicted class: 01-wack
Model is 79.67% sure about this prediction.
Predicted class: 01-wack
Model is 89.60% sure about this prediction.
Predicted class: 01-wack
Model is 95.28% sure about this prediction.
Predicted class: 01-wack
Model is 74.12% sure about this prediction.
Predicted class: 01-wack
Model is 90.14% sure about this prediction.
Predicted class: 01-wack
Model is 85.12% sure about this prediction.
Predicted class: 01-wack
Model is 91.34% sure about this prediction.
Predicted class: 01-wack
Model is 92.15% sure about this prediction.
Predicted class: 01-wack
Model is 95.70% sure about this prediction.
Predicted class: 01-wack
Model is 91.02% sure about this prediction.
Predicted class: 01-wack
Model is 92.47% sure about this prediction.
Predicted class: 01-wack
Model is 97.09% sure about this prediction.
Predicted class: 01-wack
Model is 90.89% sure about this prediction.
Predicted class: 00-wack
Model is 73.70% sure about this prediction.
Predicted class: 01-wack
Model is 77.19% sure about this prediction.
Predicted class: 01-wack
Model is 54.17% sure about this prediction.
Predicted class: 01-wack
Model is 96.00% sure about this prediction.
Predicted class: 01-wack
Model is 87.86% sure about this prediction.
Predicted class: 01-wack
Model is 95.65% sure about this prediction.
Predicted class: 01-wack
Model is 80.30% sure about this prediction.
Predicted class: 01-wack
Model is 87.80% sure about this prediction.
Predicted class: 01-wack
Model is 80.92% sure about this prediction.
Predicted class: 01-wack
Model is 78.99% sure about this prediction.
Predicted class: 01-wack
Model is 77.48% sure about this prediction.
Predicted class: 01-wack
Model is 62.77% sure about this prediction.

```
Predicted class: 01-wack
Model is 72.75% sure about this prediction.
Predicted class: 01-wack
Model is 70.44% sure about this prediction.
Predicted class: 01-wack
Model is 73.93% sure about this prediction.
Predicted class: 01-wack
Model is 77.77% sure about this prediction.
Predicted class: 01-wack
Model is 71.66% sure about this prediction.
Predicted class: 01-wack
Model is 69.42% sure about this prediction.
Predicted class: 01-wack
Model is 77.72% sure about this prediction.
Predicted class: 01-wack
Model is 66.17% sure about this prediction.
Predicted class: 01-wack
Model is 81.13% sure about this prediction.
Correct whack!
```

```
score is: 1, round count is 4
capturing frames...
random led is: 5
Mole is on 12-wack
amount of frames is 48
Predicted class: 01-wack
Model is 73.66% sure about this prediction.
Predicted class: 01-wack
Model is 73.74% sure about this prediction.
Predicted class: 01-wack
Model is 76.65% sure about this prediction.
Predicted class: 01-wack
Model is 94.98% sure about this prediction.
Predicted class: 01-wack
Model is 96.36% sure about this prediction.
Predicted class: 01-wack
Model is 98.60% sure about this prediction.
Predicted class: 01-wack
Model is 97.66% sure about this prediction.
Predicted class: 01-wack
Model is 92.62% sure about this prediction.
Predicted class: 01-wack
Model is 79.87% sure about this prediction.
Predicted class: 01-wack
Model is 91.94% sure about this prediction.
Predicted class: 01-wack
Model is 73.75% sure about this prediction.
Predicted class: 01-wack
Model is 76.85% sure about this prediction.
Predicted class: 01-wack
Model is 65.93% sure about this prediction.
Predicted class: 01-wack
Model is 54.27% sure about this prediction.
```

Predicted class: 01-wack
Model is 68.57% sure about this prediction.
Predicted class: 01-wack
Model is 63.49% sure about this prediction.
Predicted class: 01-wack
Model is 60.20% sure about this prediction.
Predicted class: 01-wack
Model is 47.82% sure about this prediction.
Predicted class: 01-wack
Model is 54.94% sure about this prediction.
Predicted class: 01-wack
Model is 60.01% sure about this prediction.
Predicted class: 02-wack
Model is 49.13% sure about this prediction.
Predicted class: 01-wack
Model is 47.06% sure about this prediction.
Predicted class: 02-wack
Model is 58.33% sure about this prediction.
Predicted class: 02-wack
Model is 60.98% sure about this prediction.
Predicted class: 02-wack
Model is 62.67% sure about this prediction.
Predicted class: 02-wack
Model is 51.59% sure about this prediction.
Predicted class: 01-wack
Model is 43.97% sure about this prediction.
Predicted class: 01-wack
Model is 65.47% sure about this prediction.
Predicted class: 01-wack
Model is 73.28% sure about this prediction.
Predicted class: 01-wack
Model is 69.77% sure about this prediction.
Predicted class: 01-wack
Model is 73.49% sure about this prediction.
Predicted class: 01-wack
Model is 73.03% sure about this prediction.
Predicted class: 01-wack
Model is 68.50% sure about this prediction.
Predicted class: 01-wack
Model is 56.51% sure about this prediction.
Predicted class: 01-wack
Model is 63.31% sure about this prediction.
Predicted class: 01-wack
Model is 79.68% sure about this prediction.
Predicted class: 01-wack
Model is 64.37% sure about this prediction.
Predicted class: 01-wack
Model is 80.28% sure about this prediction.
Predicted class: 01-wack
Model is 72.12% sure about this prediction.
Predicted class: 01-wack
Model is 73.50% sure about this prediction.
Predicted class: 01-wack
Model is 81.15% sure about this prediction.

```
Predicted class: 01-wack
Model is 73.40% sure about this prediction.
Predicted class: 01-wack
Model is 87.47% sure about this prediction.
Predicted class: 01-wack
Model is 83.25% sure about this prediction.
Predicted class: 01-wack
Model is 79.43% sure about this prediction.
Predicted class: 01-wack
Model is 66.14% sure about this prediction.
Predicted class: 02-wack
Model is 59.30% sure about this prediction.
Predicted class: 02-wack
Model is 90.68% sure about this prediction.
Miss!
```

```
score is: 1, round count is 5
```

Code 27: Model one test five

9.4 Test results model two

```
laris@raspberrypi:~/Desktop/whackamole $ python game.py
starting the game
capturing frames...
random led is: 1
Mole is on 01-wack
amount of frames is 20
Predicted class: 01-wack
Model is 53.64% sure about this prediction.
Predicted class: 01-wack
Model is 79.06% sure about this prediction.
Predicted class: 01-wack
Model is 62.43% sure about this prediction.
Predicted class: 01-wack
Model is 64.33% sure about this prediction.
Predicted class: 01-wack
Model is 83.83% sure about this prediction.
Predicted class: 01-wack
Model is 67.70% sure about this prediction.
Predicted class: 01-wack
Model is 68.20% sure about this prediction.
Predicted class: 01-wack
Model is 89.37% sure about this prediction.
Predicted class: 01-wack
Model is 93.79% sure about this prediction.
Predicted class: 01-wack
Model is 90.68% sure about this prediction.
Predicted class: 01-wack
Model is 58.70% sure about this prediction.
Predicted class: 01-wack
Model is 52.77% sure about this prediction.
```

```
Predicted class: 02-wack
Model is 81.42% sure about this prediction.
Predicted class: 01-wack
Model is 50.22% sure about this prediction.
Predicted class: 01-wack
Model is 49.50% sure about this prediction.
Predicted class: 02-wack
Model is 56.05% sure about this prediction.
Predicted class: 02-wack
Model is 55.39% sure about this prediction.
Predicted class: 02-wack
Model is 50.84% sure about this prediction.
Predicted class: 02-wack
Model is 69.22% sure about this prediction.
Predicted class: 02-wack
Model is 64.77% sure about this prediction.
Correct whack!
```

```
score is: 1, round count is 1
[mjpeg @ 0x2ae014a0] overread 8
capturing frames...
random led is: 1
Mole is on 01-wack
amount of frames is 32
Predicted class: 02-wack
Model is 63.75% sure about this prediction.
Predicted class: 02-wack
Model is 56.68% sure about this prediction.
Predicted class: 02-wack
Model is 68.60% sure about this prediction.
Predicted class: 01-wack
Model is 51.62% sure about this prediction.
Predicted class: 02-wack
Model is 59.31% sure about this prediction.
Predicted class: 01-wack
Model is 49.19% sure about this prediction.
Predicted class: 01-wack
Model is 48.87% sure about this prediction.
Predicted class: 02-wack
Model is 51.42% sure about this prediction.
Predicted class: 02-wack
Model is 51.64% sure about this prediction.
Predicted class: 01-wack
Model is 52.99% sure about this prediction.
Predicted class: 02-wack
Model is 56.11% sure about this prediction.
Predicted class: 01-wack
Model is 54.33% sure about this prediction.
Predicted class: 01-wack
Model is 49.54% sure about this prediction.
Predicted class: 01-wack
Model is 67.78% sure about this prediction.
Predicted class: 01-wack
```

Model is 70.14% sure about this prediction.
Predicted class: 01-wack
Model is 69.15% sure about this prediction.
Predicted class: 02-wack
Model is 52.53% sure about this prediction.
Predicted class: 01-wack
Model is 72.96% sure about this prediction.
Predicted class: 01-wack
Model is 65.77% sure about this prediction.
Predicted class: 02-wack
Model is 41.36% sure about this prediction.
Predicted class: 01-wack
Model is 51.50% sure about this prediction.
Predicted class: 01-wack
Model is 76.77% sure about this prediction.
Predicted class: 01-wack
Model is 44.38% sure about this prediction.
Predicted class: 01-wack
Model is 71.55% sure about this prediction.
Predicted class: 01-wack
Model is 89.68% sure about this prediction.
Predicted class: 01-wack
Model is 75.04% sure about this prediction.
Predicted class: 02-wack
Model is 53.26% sure about this prediction.
Predicted class: 02-wack
Model is 77.50% sure about this prediction.
Predicted class: 02-wack
Model is 57.25% sure about this prediction.
Predicted class: 02-wack
Model is 52.23% sure about this prediction.
Predicted class: 02-wack
Model is 53.81% sure about this prediction.
Predicted class: 02-wack
Model is 63.23% sure about this prediction.
Correct whack!

score is: 2, round count is 2
capturing frames...
random led is: 2
Mole is on 02-wack
amount of frames is 33
Predicted class: 01-wack
Model is 63.43% sure about this prediction.
Predicted class: 01-wack
Model is 77.53% sure about this prediction.
Predicted class: 01-wack
Model is 73.45% sure about this prediction.
Predicted class: 01-wack
Model is 73.87% sure about this prediction.
Predicted class: 01-wack
Model is 63.50% sure about this prediction.
Predicted class: 01-wack

Model is 71.26% sure about this prediction.
Predicted class: 01-wack
Model is 67.58% sure about this prediction.
Predicted class: 01-wack
Model is 68.74% sure about this prediction.
Predicted class: 01-wack
Model is 75.55% sure about this prediction.
Predicted class: 01-wack
Model is 73.73% sure about this prediction.
Predicted class: 01-wack
Model is 84.77% sure about this prediction.
Predicted class: 01-wack
Model is 79.01% sure about this prediction.
Predicted class: 01-wack
Model is 75.95% sure about this prediction.
Predicted class: 01-wack
Model is 78.54% sure about this prediction.
Predicted class: 01-wack
Model is 80.13% sure about this prediction.
Predicted class: 01-wack
Model is 65.04% sure about this prediction.
Predicted class: 01-wack
Model is 73.90% sure about this prediction.
Predicted class: 00-wack
Model is 49.03% sure about this prediction.
Predicted class: 02-wack
Model is 34.79% sure about this prediction.
Predicted class: 02-wack
Model is 48.30% sure about this prediction.
Predicted class: 01-wack
Model is 73.03% sure about this prediction.
Predicted class: 01-wack
Model is 73.40% sure about this prediction.
Predicted class: 01-wack
Model is 83.21% sure about this prediction.
Predicted class: 01-wack
Model is 66.87% sure about this prediction.
Predicted class: 01-wack
Model is 56.10% sure about this prediction.
Predicted class: 02-wack
Model is 51.96% sure about this prediction.
Predicted class: 01-wack
Model is 63.75% sure about this prediction.
Predicted class: 01-wack
Model is 69.48% sure about this prediction.
Predicted class: 01-wack
Model is 50.37% sure about this prediction.
Predicted class: 02-wack
Model is 62.62% sure about this prediction.
Predicted class: 02-wack
Model is 64.67% sure about this prediction.
Predicted class: 02-wack
Model is 71.66% sure about this prediction.
Predicted class: 02-wack

Model is 62.32% sure about this prediction.
Correct whack!

```
score is: 3, round count is 3
capturing frames...
random led is: 0
Mole is on 00-wack
amount of frames is 31
Predicted class: 02-wack
Model is 70.16% sure about this prediction.
Predicted class: 02-wack
Model is 81.69% sure about this prediction.
Predicted class: 02-wack
Model is 68.58% sure about this prediction.
Predicted class: 02-wack
Model is 66.02% sure about this prediction.
Predicted class: 02-wack
Model is 60.16% sure about this prediction.
Predicted class: 02-wack
Model is 69.43% sure about this prediction.
Predicted class: 02-wack
Model is 69.96% sure about this prediction.
Predicted class: 02-wack
Model is 72.80% sure about this prediction.
Predicted class: 02-wack
Model is 68.25% sure about this prediction.
Predicted class: 02-wack
Model is 78.31% sure about this prediction.
Predicted class: 02-wack
Model is 71.87% sure about this prediction.
Predicted class: 02-wack
Model is 63.82% sure about this prediction.
Predicted class: 02-wack
Model is 70.23% sure about this prediction.
Predicted class: 02-wack
Model is 59.18% sure about this prediction.
Predicted class: 02-wack
Model is 67.22% sure about this prediction.
Predicted class: 02-wack
Model is 65.93% sure about this prediction.
Predicted class: 02-wack
Model is 71.62% sure about this prediction.
Predicted class: 02-wack
Model is 55.63% sure about this prediction.
Predicted class: 01-wack
Model is 56.01% sure about this prediction.
Predicted class: 02-wack
Model is 72.47% sure about this prediction.
Predicted class: 02-wack
Model is 60.42% sure about this prediction.
Predicted class: 02-wack
Model is 64.10% sure about this prediction.
Predicted class: 02-wack
```

```
Model is 54.76% sure about this prediction.  
Predicted class: 01-wack  
Model is 59.49% sure about this prediction.  
Predicted class: 02-wack  
Model is 53.65% sure about this prediction.  
Predicted class: 02-wack  
Model is 61.68% sure about this prediction.  
Predicted class: 01-wack  
Model is 46.59% sure about this prediction.  
Predicted class: 02-wack  
Model is 70.23% sure about this prediction.  
Predicted class: 02-wack  
Model is 79.22% sure about this prediction.  
Predicted class: 02-wack  
Model is 69.75% sure about this prediction.  
Predicted class: 02-wack  
Model is 60.21% sure about this prediction.  
Miss!
```

```
score is: 3, round count is 4  
capturing frames...  
random led is: 1  
Mole is on 01-wack  
amount of frames is 32  
Predicted class: 02-wack  
Model is 49.36% sure about this prediction.  
Predicted class: 02-wack  
Model is 34.31% sure about this prediction.  
Predicted class: 02-wack  
Model is 52.58% sure about this prediction.  
Predicted class: 01-wack  
Model is 51.90% sure about this prediction.  
Predicted class: 01-wack  
Model is 52.40% sure about this prediction.  
Predicted class: 02-wack  
Model is 47.47% sure about this prediction.  
Predicted class: 02-wack  
Model is 51.38% sure about this prediction.  
Predicted class: 02-wack  
Model is 52.68% sure about this prediction.  
Predicted class: 01-wack  
Model is 48.72% sure about this prediction.  
Predicted class: 01-wack  
Model is 57.23% sure about this prediction.  
Predicted class: 01-wack  
Model is 57.33% sure about this prediction.  
Predicted class: 01-wack  
Model is 61.77% sure about this prediction.  
Predicted class: 02-wack  
Model is 47.13% sure about this prediction.  
Predicted class: 02-wack  
Model is 56.21% sure about this prediction.  
Predicted class: 02-wack
```

```
Model is 53.13% sure about this prediction.  
Predicted class: 02-wack  
Model is 68.29% sure about this prediction.  
Predicted class: 02-wack  
Model is 72.76% sure about this prediction.  
Predicted class: 02-wack  
Model is 75.79% sure about this prediction.  
Predicted class: 02-wack  
Model is 75.03% sure about this prediction.  
Predicted class: 01-wack  
Model is 85.37% sure about this prediction.  
Predicted class: 01-wack  
Model is 92.19% sure about this prediction.  
Predicted class: 01-wack  
Model is 94.15% sure about this prediction.  
Predicted class: 02-wack  
Model is 49.47% sure about this prediction.  
Predicted class: 01-wack  
Model is 62.28% sure about this prediction.  
Predicted class: 01-wack  
Model is 60.79% sure about this prediction.  
Predicted class: 01-wack  
Model is 71.80% sure about this prediction.  
Predicted class: 01-wack  
Model is 77.78% sure about this prediction.  
Predicted class: 01-wack  
Model is 62.78% sure about this prediction.  
Predicted class: 01-wack  
Model is 64.70% sure about this prediction.  
Predicted class: 01-wack  
Model is 63.11% sure about this prediction.  
Predicted class: 01-wack  
Model is 59.96% sure about this prediction.  
Predicted class: 01-wack  
Model is 53.66% sure about this prediction.  
Correct whack!
```

```
score is: 4, round count is 5
```

Code 28: Model two test one

```
laris@raspberrypi:~/Desktop/whackamole $ python game.py  
WARNING:absl:Compiled the loaded model, but the compiled metrics have yet to be built. `model.compile()  
starting the game  
capturing frames...  
random led is: 1  
Mole is on 01-wack  
amount of frames is 20  
Predicted class: 01-wack  
Model is 83.34% sure about this prediction.  
Predicted class: 01-wack  
Model is 73.49% sure about this prediction.
```

```
Predicted class: 02-wack
Model is 83.19% sure about this prediction.
Predicted class: 01-wack
Model is 44.09% sure about this prediction.
Predicted class: 01-wack
Model is 53.47% sure about this prediction.
Predicted class: 01-wack
Model is 56.46% sure about this prediction.
Predicted class: 01-wack
Model is 51.63% sure about this prediction.
Predicted class: 01-wack
Model is 79.08% sure about this prediction.
Predicted class: 01-wack
Model is 71.45% sure about this prediction.
Predicted class: 01-wack
Model is 73.84% sure about this prediction.
Predicted class: 01-wack
Model is 68.81% sure about this prediction.
Predicted class: 01-wack
Model is 81.76% sure about this prediction.
Predicted class: 01-wack
Model is 65.51% sure about this prediction.
Predicted class: 01-wack
Model is 62.25% sure about this prediction.
Predicted class: 01-wack
Model is 69.11% sure about this prediction.
Predicted class: 01-wack
Model is 70.35% sure about this prediction.
Predicted class: 01-wack
Model is 68.52% sure about this prediction.
Predicted class: 01-wack
Model is 72.93% sure about this prediction.
Predicted class: 01-wack
Model is 72.76% sure about this prediction.
Predicted class: 01-wack
Model is 74.82% sure about this prediction.
Correct whack!
```

```
score is: 1, round count is 1
capturing frames...
random led is: 1
Mole is on 01-wack
amount of frames is 47
Predicted class: 01-wack
Model is 83.92% sure about this prediction.
Predicted class: 01-wack
Model is 84.27% sure about this prediction.
Predicted class: 01-wack
Model is 82.92% sure about this prediction.
Predicted class: 01-wack
Model is 85.10% sure about this prediction.
Predicted class: 01-wack
Model is 83.59% sure about this prediction.
```

Predicted class: 01-wack
Model is 71.29% sure about this prediction.
Predicted class: 01-wack
Model is 77.62% sure about this prediction.
Predicted class: 01-wack
Model is 58.51% sure about this prediction.
Predicted class: 02-wack
Model is 62.99% sure about this prediction.
Predicted class: 02-wack
Model is 67.92% sure about this prediction.
Predicted class: 02-wack
Model is 69.25% sure about this prediction.
Predicted class: 02-wack
Model is 78.91% sure about this prediction.
Predicted class: 02-wack
Model is 76.95% sure about this prediction.
Predicted class: 02-wack
Model is 79.47% sure about this prediction.
Predicted class: 02-wack
Model is 69.44% sure about this prediction.
Predicted class: 02-wack
Model is 72.45% sure about this prediction.
Predicted class: 02-wack
Model is 79.51% sure about this prediction.
Predicted class: 02-wack
Model is 76.61% sure about this prediction.
Predicted class: 02-wack
Model is 83.77% sure about this prediction.
Predicted class: 02-wack
Model is 81.71% sure about this prediction.
Predicted class: 02-wack
Model is 86.53% sure about this prediction.
Predicted class: 02-wack
Model is 79.49% sure about this prediction.
Predicted class: 02-wack
Model is 79.12% sure about this prediction.
Predicted class: 02-wack
Model is 83.04% sure about this prediction.
Predicted class: 02-wack
Model is 82.85% sure about this prediction.
Predicted class: 02-wack
Model is 86.00% sure about this prediction.
Predicted class: 02-wack
Model is 89.83% sure about this prediction.
Predicted class: 02-wack
Model is 89.19% sure about this prediction.
Predicted class: 02-wack
Model is 85.30% sure about this prediction.
Predicted class: 02-wack
Model is 89.59% sure about this prediction.
Predicted class: 02-wack
Model is 85.62% sure about this prediction.
Predicted class: 02-wack
Model is 87.48% sure about this prediction.

```
Predicted class: 02-wack
Model is 50.47% sure about this prediction.
Predicted class: 01-wack
Model is 70.55% sure about this prediction.
Predicted class: 02-wack
Model is 75.79% sure about this prediction.
Predicted class: 02-wack
Model is 63.59% sure about this prediction.
Predicted class: 02-wack
Model is 66.11% sure about this prediction.
Predicted class: 01-wack
Model is 47.27% sure about this prediction.
Predicted class: 02-wack
Model is 67.24% sure about this prediction.
Predicted class: 02-wack
Model is 57.14% sure about this prediction.
Predicted class: 02-wack
Model is 65.75% sure about this prediction.
Predicted class: 02-wack
Model is 59.76% sure about this prediction.
Predicted class: 01-wack
Model is 54.35% sure about this prediction.
Predicted class: 02-wack
Model is 69.51% sure about this prediction.
Predicted class: 02-wack
Model is 80.33% sure about this prediction.
Predicted class: 02-wack
Model is 69.56% sure about this prediction.
Predicted class: 02-wack
Model is 57.29% sure about this prediction.
Correct whack!
```

```
score is: 2, round count is 2
capturing frames...
random led is: 0
Mole is on 00-wack
amount of frames is 47
Predicted class: 02-wack
Model is 53.77% sure about this prediction.
Predicted class: 02-wack
Model is 61.02% sure about this prediction.
Predicted class: 01-wack
Model is 51.11% sure about this prediction.
Predicted class: 02-wack
Model is 56.05% sure about this prediction.
Predicted class: 02-wack
Model is 63.11% sure about this prediction.
Predicted class: 01-wack
Model is 55.77% sure about this prediction.
Predicted class: 01-wack
Model is 59.35% sure about this prediction.
Predicted class: 01-wack
Model is 58.93% sure about this prediction.
```

Predicted class: 01-wack
Model is 59.11% sure about this prediction.
Predicted class: 02-wack
Model is 54.35% sure about this prediction.
Predicted class: 02-wack
Model is 76.96% sure about this prediction.
Predicted class: 02-wack
Model is 73.62% sure about this prediction.
Predicted class: 02-wack
Model is 62.64% sure about this prediction.
Predicted class: 02-wack
Model is 56.60% sure about this prediction.
Predicted class: 02-wack
Model is 85.39% sure about this prediction.
Predicted class: 02-wack
Model is 81.54% sure about this prediction.
Predicted class: 02-wack
Model is 78.91% sure about this prediction.
Predicted class: 02-wack
Model is 86.66% sure about this prediction.
Predicted class: 02-wack
Model is 84.53% sure about this prediction.
Predicted class: 02-wack
Model is 82.82% sure about this prediction.
Predicted class: 02-wack
Model is 80.51% sure about this prediction.
Predicted class: 02-wack
Model is 82.03% sure about this prediction.
Predicted class: 02-wack
Model is 83.61% sure about this prediction.
Predicted class: 02-wack
Model is 80.38% sure about this prediction.
Predicted class: 02-wack
Model is 82.12% sure about this prediction.
Predicted class: 02-wack
Model is 83.08% sure about this prediction.
Predicted class: 02-wack
Model is 83.53% sure about this prediction.
Predicted class: 02-wack
Model is 81.25% sure about this prediction.
Predicted class: 02-wack
Model is 86.53% sure about this prediction.
Predicted class: 02-wack
Model is 82.47% sure about this prediction.
Predicted class: 02-wack
Model is 78.82% sure about this prediction.
Predicted class: 02-wack
Model is 81.88% sure about this prediction.
Predicted class: 02-wack
Model is 84.13% sure about this prediction.

```
Predicted class: 02-wack
Model is 76.01% sure about this prediction.
Predicted class: 02-wack
Model is 61.34% sure about this prediction.
Predicted class: 02-wack
Model is 72.38% sure about this prediction.
Predicted class: 02-wack
Model is 46.90% sure about this prediction.
Predicted class: 02-wack
Model is 76.67% sure about this prediction.
Predicted class: 02-wack
Model is 61.98% sure about this prediction.
Predicted class: 02-wack
Model is 75.79% sure about this prediction.
Predicted class: 02-wack
Model is 80.44% sure about this prediction.
Predicted class: 02-wack
Model is 78.78% sure about this prediction.
Predicted class: 02-wack
Model is 76.08% sure about this prediction.
Predicted class: 02-wack
Model is 73.31% sure about this prediction.
Predicted class: 02-wack
Model is 79.71% sure about this prediction.
Miss!
```

```
score is: 2, round count is 3
capturing frames...
random led is: 3
Mole is on 10-wack
amount of frames is 47
Predicted class: 02-wack
Model is 84.91% sure about this prediction.
Predicted class: 02-wack
Model is 86.96% sure about this prediction.
Predicted class: 02-wack
Model is 80.35% sure about this prediction.
Predicted class: 02-wack
Model is 72.57% sure about this prediction.
Predicted class: 02-wack
Model is 78.48% sure about this prediction.
Predicted class: 02-wack
Model is 79.07% sure about this prediction.
Predicted class: 02-wack
Model is 77.34% sure about this prediction.
Predicted class: 02-wack
Model is 79.13% sure about this prediction.
Predicted class: 02-wack
Model is 84.90% sure about this prediction.
Predicted class: 02-wack
Model is 80.99% sure about this prediction.
Predicted class: 02-wack
Model is 77.83% sure about this prediction.
```

Predicted class: 02-wack
Model is 76.44% sure about this prediction.
Predicted class: 02-wack
Model is 72.27% sure about this prediction.
Predicted class: 02-wack
Model is 68.76% sure about this prediction.
Predicted class: 02-wack
Model is 72.25% sure about this prediction.
Predicted class: 02-wack
Model is 85.68% sure about this prediction.
Predicted class: 02-wack
Model is 90.36% sure about this prediction.
Predicted class: 02-wack
Model is 86.01% sure about this prediction.
Predicted class: 02-wack
Model is 86.89% sure about this prediction.
Predicted class: 02-wack
Model is 70.15% sure about this prediction.
Predicted class: 02-wack
Model is 62.95% sure about this prediction.
Predicted class: 02-wack
Model is 66.97% sure about this prediction.
Predicted class: 02-wack
Model is 74.70% sure about this prediction.
Predicted class: 02-wack
Model is 69.93% sure about this prediction.
Predicted class: 02-wack
Model is 89.00% sure about this prediction.
Predicted class: 02-wack
Model is 83.47% sure about this prediction.
Predicted class: 02-wack
Model is 81.62% sure about this prediction.
Predicted class: 02-wack
Model is 87.38% sure about this prediction.
Predicted class: 02-wack
Model is 87.22% sure about this prediction.
Predicted class: 02-wack
Model is 82.44% sure about this prediction.
Predicted class: 02-wack
Model is 85.18% sure about this prediction.
Predicted class: 02-wack
Model is 82.88% sure about this prediction.
Predicted class: 00-wack
Model is 42.69% sure about this prediction.
Predicted class: 00-wack
Model is 54.22% sure about this prediction.
Predicted class: 00-wack
Model is 57.19% sure about this prediction.
Predicted class: 00-wack
Model is 68.55% sure about this prediction.
Predicted class: 00-wack
Model is 36.68% sure about this prediction.
Predicted class: 00-wack
Model is 61.33% sure about this prediction.

```
Predicted class: 00-wack
Model is 39.89% sure about this prediction.
Predicted class: 00-wack
Model is 60.13% sure about this prediction.
Predicted class: 00-wack
Model is 67.49% sure about this prediction.
Predicted class: 00-wack
Model is 58.47% sure about this prediction.
Predicted class: 00-wack
Model is 45.60% sure about this prediction.
Predicted class: 00-wack
Model is 46.83% sure about this prediction.
Predicted class: 00-wack
Model is 58.28% sure about this prediction.
Predicted class: 00-wack
Model is 47.47% sure about this prediction.
Predicted class: 00-wack
Model is 53.49% sure about this prediction.
Miss!
```

```
score is: 2, round count is 4
capturing frames...
random led is: 0
Mole is on 00-wack
amount of frames is 48
Predicted class: 00-wack
Model is 57.37% sure about this prediction.
Predicted class: 00-wack
Model is 59.64% sure about this prediction.
Predicted class: 00-wack
Model is 69.20% sure about this prediction.
Predicted class: 00-wack
Model is 53.62% sure about this prediction.
Predicted class: 00-wack
Model is 63.63% sure about this prediction.
Predicted class: 02-wack
Model is 75.55% sure about this prediction.
Predicted class: 02-wack
Model is 59.73% sure about this prediction.
Predicted class: 02-wack
Model is 74.12% sure about this prediction.
Predicted class: 02-wack
Model is 68.11% sure about this prediction.
Predicted class: 02-wack
Model is 74.64% sure about this prediction.
Predicted class: 02-wack
Model is 81.48% sure about this prediction.
Predicted class: 02-wack
Model is 74.96% sure about this prediction.
Predicted class: 02-wack
Model is 71.03% sure about this prediction.
Predicted class: 02-wack
Model is 76.67% sure about this prediction.
```

Predicted class: 02-wack
Model is 79.31% sure about this prediction.
Predicted class: 02-wack
Model is 80.47% sure about this prediction.
Predicted class: 02-wack
Model is 74.11% sure about this prediction.
Predicted class: 02-wack
Model is 76.60% sure about this prediction.
Predicted class: 02-wack
Model is 84.46% sure about this prediction.
Predicted class: 02-wack
Model is 84.58% sure about this prediction.
Predicted class: 02-wack
Model is 81.95% sure about this prediction.
Predicted class: 02-wack
Model is 77.55% sure about this prediction.
Predicted class: 02-wack
Model is 79.95% sure about this prediction.
Predicted class: 02-wack
Model is 82.75% sure about this prediction.
Predicted class: 02-wack
Model is 80.96% sure about this prediction.
Predicted class: 02-wack
Model is 83.11% sure about this prediction.
Predicted class: 02-wack
Model is 79.54% sure about this prediction.
Predicted class: 02-wack
Model is 81.71% sure about this prediction.
Predicted class: 02-wack
Model is 80.04% sure about this prediction.
Predicted class: 02-wack
Model is 86.68% sure about this prediction.
Predicted class: 02-wack
Model is 82.95% sure about this prediction.
Predicted class: 02-wack
Model is 84.98% sure about this prediction.
Predicted class: 02-wack
Model is 85.45% sure about this prediction.
Predicted class: 02-wack
Model is 83.77% sure about this prediction.
Predicted class: 02-wack
Model is 82.31% sure about this prediction.
Predicted class: 02-wack
Model is 83.67% sure about this prediction.
Predicted class: 02-wack
Model is 77.70% sure about this prediction.
Predicted class: 02-wack
Model is 68.38% sure about this prediction.
Predicted class: 02-wack
Model is 83.68% sure about this prediction.
Predicted class: 02-wack
Model is 74.62% sure about this prediction.
Predicted class: 02-wack
Model is 37.66% sure about this prediction.

```
Predicted class: 02-wack
Model is 86.58% sure about this prediction.
Predicted class: 02-wack
Model is 87.48% sure about this prediction.
Predicted class: 02-wack
Model is 80.22% sure about this prediction.
Predicted class: 02-wack
Model is 89.64% sure about this prediction.
Predicted class: 02-wack
Model is 83.68% sure about this prediction.
Predicted class: 02-wack
Model is 74.74% sure about this prediction.
Predicted class: 02-wack
Model is 71.03% sure about this prediction.
Correct whack!
```

```
score is: 3, round count is 5
```

Code 29: Model two test two

```
laris@raspberrypi:~/Desktop/whackamole $ python game.py
WARNING:absl:Compiled the loaded model, but the compiled metrics have yet to be built. `model.compile_` starting the game
capturing frames...
random led is: 0
Mole is on 00-wack
amount of frames is 20
Predicted class: 02-wack
Model is 39.99% sure about this prediction.
Predicted class: 02-wack
Model is 30.82% sure about this prediction.
Predicted class: 02-wack
Model is 59.72% sure about this prediction.
Predicted class: 02-wack
Model is 41.06% sure about this prediction.
Predicted class: 00-wack
Model is 63.37% sure about this prediction.
Predicted class: 00-wack
Model is 46.55% sure about this prediction.
Predicted class: 00-wack
Model is 65.78% sure about this prediction.
Predicted class: 00-wack
Model is 47.05% sure about this prediction.
Predicted class: 00-wack
Model is 57.58% sure about this prediction.
Predicted class: 00-wack
Model is 57.93% sure about this prediction.
Predicted class: 00-wack
Model is 86.75% sure about this prediction.
Predicted class: 00-wack
Model is 73.07% sure about this prediction.
Predicted class: 00-wack
```

```
Model is 70.04% sure about this prediction.  
Predicted class: 00-wack  
Model is 79.14% sure about this prediction.  
Predicted class: 00-wack  
Model is 81.10% sure about this prediction.  
Predicted class: 00-wack  
Model is 77.50% sure about this prediction.  
Predicted class: 00-wack  
Model is 64.95% sure about this prediction.  
Predicted class: 00-wack  
Model is 74.04% sure about this prediction.  
Predicted class: 00-wack  
Model is 69.19% sure about this prediction.  
Predicted class: 00-wack  
Model is 71.27% sure about this prediction.  
Correct whack!
```

```
score is: 1, round count is 1  
capturing frames...  
random led is: 3  
Mole is on 10-wack  
amount of frames is 34  
Predicted class: 01-wack  
Model is 32.95% sure about this prediction.  
Predicted class: 00-wack  
Model is 53.14% sure about this prediction.  
Predicted class: 00-wack  
Model is 67.00% sure about this prediction.  
Predicted class: 00-wack  
Model is 69.68% sure about this prediction.  
Predicted class: 00-wack  
Model is 67.30% sure about this prediction.  
Predicted class: 00-wack  
Model is 63.20% sure about this prediction.  
Predicted class: 00-wack  
Model is 65.55% sure about this prediction.  
Predicted class: 00-wack  
Model is 53.03% sure about this prediction.  
Predicted class: 00-wack  
Model is 55.73% sure about this prediction.  
Predicted class: 00-wack  
Model is 65.74% sure about this prediction.  
Predicted class: 00-wack  
Model is 66.18% sure about this prediction.  
Predicted class: 00-wack  
Model is 47.06% sure about this prediction.  
Predicted class: 00-wack  
Model is 69.65% sure about this prediction.  
Predicted class: 01-wack  
Model is 34.11% sure about this prediction.  
Predicted class: 02-wack  
Model is 50.46% sure about this prediction.  
Predicted class: 02-wack
```

Model is 70.26% sure about this prediction.
Predicted class: 00-wack
Model is 54.62% sure about this prediction.
Predicted class: 00-wack
Model is 54.42% sure about this prediction.
Predicted class: 00-wack
Model is 52.20% sure about this prediction.
Predicted class: 01-wack
Model is 38.17% sure about this prediction.
Predicted class: 02-wack
Model is 30.42% sure about this prediction.
Predicted class: 00-wack
Model is 37.33% sure about this prediction.
Predicted class: 02-wack
Model is 38.54% sure about this prediction.
Predicted class: 02-wack
Model is 32.51% sure about this prediction.
Predicted class: 02-wack
Model is 38.61% sure about this prediction.
Predicted class: 00-wack
Model is 30.52% sure about this prediction.
Predicted class: 02-wack
Model is 38.71% sure about this prediction.
Predicted class: 02-wack
Model is 31.01% sure about this prediction.
Predicted class: 00-wack
Model is 31.10% sure about this prediction.
Predicted class: 00-wack
Model is 34.86% sure about this prediction.
Predicted class: 00-wack
Model is 32.74% sure about this prediction.
Predicted class: 02-wack
Model is 30.51% sure about this prediction.
Predicted class: 02-wack
Model is 28.17% sure about this prediction.
Predicted class: 00-wack
Model is 31.92% sure about this prediction.
Miss!

score is: 1, round count is 2
capturing frames...
random led is: 4
Mole is on 11-wack
amount of frames is 34
Predicted class: 00-wack
Model is 36.98% sure about this prediction.
Predicted class: 00-wack
Model is 42.76% sure about this prediction.
Predicted class: 01-wack
Model is 30.15% sure about this prediction.
Predicted class: 01-wack
Model is 42.89% sure about this prediction.
Predicted class: 01-wack

Model is 37.67% sure about this prediction.
Predicted class: 01-wack
Model is 37.46% sure about this prediction.
Predicted class: 01-wack
Model is 41.81% sure about this prediction.
Predicted class: 02-wack
Model is 47.58% sure about this prediction.
Predicted class: 00-wack
Model is 36.24% sure about this prediction.
Predicted class: 00-wack
Model is 83.38% sure about this prediction.
Predicted class: 01-wack
Model is 45.93% sure about this prediction.
Predicted class: 00-wack
Model is 48.98% sure about this prediction.
Predicted class: 00-wack
Model is 62.38% sure about this prediction.
Predicted class: 02-wack
Model is 55.39% sure about this prediction.
Predicted class: 01-wack
Model is 46.32% sure about this prediction.
Predicted class: 01-wack
Model is 54.87% sure about this prediction.
Predicted class: 01-wack
Model is 59.80% sure about this prediction.
Predicted class: 01-wack
Model is 51.02% sure about this prediction.
Predicted class: 01-wack
Model is 44.83% sure about this prediction.
Predicted class: 01-wack
Model is 62.41% sure about this prediction.
Predicted class: 01-wack
Model is 52.97% sure about this prediction.
Predicted class: 01-wack
Model is 51.58% sure about this prediction.
Predicted class: 01-wack
Model is 66.36% sure about this prediction.
Predicted class: 01-wack
Model is 71.54% sure about this prediction.
Predicted class: 01-wack
Model is 74.33% sure about this prediction.
Predicted class: 01-wack
Model is 68.89% sure about this prediction.
Predicted class: 01-wack
Model is 67.45% sure about this prediction.
Predicted class: 01-wack
Model is 67.45% sure about this prediction.
Predicted class: 01-wack
Model is 49.82% sure about this prediction.
Predicted class: 01-wack
Model is 68.38% sure about this prediction.
Predicted class: 01-wack
Model is 59.41% sure about this prediction.
Predicted class: 01-wack

```
Model is 52.94% sure about this prediction.  
Predicted class: 01-wack  
Model is 51.05% sure about this prediction.  
Predicted class: 01-wack  
Model is 56.42% sure about this prediction.  
Miss!
```

```
score is: 1, round count is 3  
capturing frames...  
random led is: 2  
Mole is on 02-wack  
amount of frames is 33  
Predicted class: 01-wack  
Model is 68.83% sure about this prediction.  
Predicted class: 01-wack  
Model is 73.39% sure about this prediction.  
Predicted class: 01-wack  
Model is 74.30% sure about this prediction.  
Predicted class: 01-wack  
Model is 71.19% sure about this prediction.  
Predicted class: 01-wack  
Model is 77.81% sure about this prediction.  
Predicted class: 01-wack  
Model is 77.70% sure about this prediction.  
Predicted class: 01-wack  
Model is 64.26% sure about this prediction.  
Predicted class: 01-wack  
Model is 65.25% sure about this prediction.  
Predicted class: 01-wack  
Model is 68.76% sure about this prediction.  
Predicted class: 01-wack  
Model is 63.76% sure about this prediction.  
Predicted class: 01-wack  
Model is 65.23% sure about this prediction.  
Predicted class: 01-wack  
Model is 73.34% sure about this prediction.  
Predicted class: 01-wack  
Model is 74.42% sure about this prediction.  
Predicted class: 02-wack  
Model is 66.75% sure about this prediction.  
Predicted class: 01-wack  
Model is 52.95% sure about this prediction.  
Predicted class: 01-wack  
Model is 49.87% sure about this prediction.  
Predicted class: 00-wack  
Model is 37.74% sure about this prediction.  
Predicted class: 02-wack  
Model is 38.02% sure about this prediction.  
Predicted class: 02-wack  
Model is 78.50% sure about this prediction.  
Predicted class: 02-wack  
Model is 70.26% sure about this prediction.  
Predicted class: 02-wack
```

Model is 75.95% sure about this prediction.
Predicted class: 01-wack
Model is 58.38% sure about this prediction.
Predicted class: 01-wack
Model is 66.72% sure about this prediction.
Predicted class: 01-wack
Model is 66.81% sure about this prediction.
Predicted class: 02-wack
Model is 53.49% sure about this prediction.
Predicted class: 02-wack
Model is 55.17% sure about this prediction.
Predicted class: 02-wack
Model is 53.73% sure about this prediction.
Predicted class: 02-wack
Model is 53.71% sure about this prediction.
Predicted class: 01-wack
Model is 49.46% sure about this prediction.
Predicted class: 01-wack
Model is 58.06% sure about this prediction.
Predicted class: 01-wack
Model is 60.34% sure about this prediction.
Predicted class: 02-wack
Model is 47.35% sure about this prediction.
Predicted class: 02-wack
Model is 47.17% sure about this prediction.
Correct whack!

score is: 2, round count is 4
capturing frames...
random led is: 1
Mole is on 01-wack
amount of frames is 34
Predicted class: 01-wack
Model is 69.78% sure about this prediction.
Predicted class: 01-wack
Model is 76.32% sure about this prediction.
Predicted class: 01-wack
Model is 69.04% sure about this prediction.
Predicted class: 01-wack
Model is 63.02% sure about this prediction.
Predicted class: 01-wack
Model is 65.39% sure about this prediction.
Predicted class: 01-wack
Model is 67.61% sure about this prediction.
Predicted class: 01-wack
Model is 65.28% sure about this prediction.
Predicted class: 01-wack
Model is 71.25% sure about this prediction.
Predicted class: 01-wack
Model is 81.50% sure about this prediction.
Predicted class: 01-wack
Model is 63.03% sure about this prediction.
Predicted class: 01-wack

```
Model is 73.44% sure about this prediction.  
Predicted class: 01-wack  
Model is 71.44% sure about this prediction.  
Predicted class: 01-wack  
Model is 63.47% sure about this prediction.  
Predicted class: 01-wack  
Model is 61.39% sure about this prediction.  
Predicted class: 01-wack  
Model is 59.02% sure about this prediction.  
Predicted class: 01-wack  
Model is 58.67% sure about this prediction.  
Predicted class: 01-wack  
Model is 74.24% sure about this prediction.  
Predicted class: 01-wack  
Model is 50.61% sure about this prediction.  
Predicted class: 01-wack  
Model is 66.76% sure about this prediction.  
Predicted class: 01-wack  
Model is 69.64% sure about this prediction.  
Predicted class: 01-wack  
Model is 66.82% sure about this prediction.  
Predicted class: 01-wack  
Model is 83.62% sure about this prediction.  
Predicted class: 01-wack  
Model is 85.52% sure about this prediction.  
Predicted class: 01-wack  
Model is 85.58% sure about this prediction.  
Predicted class: 01-wack  
Model is 82.49% sure about this prediction.  
Predicted class: 01-wack  
Model is 78.09% sure about this prediction.  
Predicted class: 01-wack  
Model is 73.04% sure about this prediction.  
Predicted class: 01-wack  
Model is 73.28% sure about this prediction.  
Predicted class: 01-wack  
Model is 70.41% sure about this prediction.  
Predicted class: 01-wack  
Model is 69.93% sure about this prediction.  
Predicted class: 01-wack  
Model is 66.20% sure about this prediction.  
Predicted class: 01-wack  
Model is 65.13% sure about this prediction.  
Predicted class: 01-wack  
Model is 64.45% sure about this prediction.  
Predicted class: 01-wack  
Model is 66.01% sure about this prediction.  
Correct whack!
```

```
score is: 3, round count is 5
```

Code 30: Model two test three

```
laris@raspberrypi:~/Desktop/whackamole $ python game.py
WARNING:absl:Compiled the loaded model, but the compiled metrics have yet to be built. `model.compile()`
starting the game
capturing frames...
random led is: 3
Mole is on 10-wack
amount of frames is 20
Predicted class: 00-wack
Model is 67.22% sure about this prediction.
Predicted class: 00-wack
Model is 65.22% sure about this prediction.
Predicted class: 00-wack
Model is 71.73% sure about this prediction.
Predicted class: 00-wack
Model is 76.72% sure about this prediction.
Predicted class: 00-wack
Model is 76.87% sure about this prediction.
Predicted class: 00-wack
Model is 66.64% sure about this prediction.
Predicted class: 00-wack
Model is 65.07% sure about this prediction.
Predicted class: 00-wack
Model is 71.49% sure about this prediction.
Predicted class: 00-wack
Model is 76.34% sure about this prediction.
Predicted class: 00-wack
Model is 83.37% sure about this prediction.
Predicted class: 00-wack
Model is 71.57% sure about this prediction.
Predicted class: 00-wack
Model is 66.72% sure about this prediction.
Predicted class: 00-wack
Model is 70.30% sure about this prediction.
Predicted class: 00-wack
Model is 64.96% sure about this prediction.
Predicted class: 00-wack
Model is 71.65% sure about this prediction.
Predicted class: 00-wack
Model is 76.45% sure about this prediction.
Predicted class: 00-wack
Model is 74.16% sure about this prediction.
Predicted class: 00-wack
Model is 82.65% sure about this prediction.
Predicted class: 00-wack
Model is 82.21% sure about this prediction.
Predicted class: 00-wack
Model is 84.16% sure about this prediction.
Miss!

score is: 0, round count is 1
capturing frames...
random led is: 3
Mole is on 10-wack
```

amount of frames is 37
Predicted class: 00-wack
Model is 76.92% sure about this prediction.
Predicted class: 00-wack
Model is 68.42% sure about this prediction.
Predicted class: 00-wack
Model is 64.25% sure about this prediction.
Predicted class: 00-wack
Model is 69.86% sure about this prediction.
Predicted class: 00-wack
Model is 70.41% sure about this prediction.
Predicted class: 00-wack
Model is 72.49% sure about this prediction.
Predicted class: 00-wack
Model is 70.70% sure about this prediction.
Predicted class: 00-wack
Model is 67.80% sure about this prediction.
Predicted class: 00-wack
Model is 69.51% sure about this prediction.
Predicted class: 00-wack
Model is 66.08% sure about this prediction.
Predicted class: 00-wack
Model is 81.12% sure about this prediction.
Predicted class: 00-wack
Model is 51.95% sure about this prediction.
Predicted class: 00-wack
Model is 53.71% sure about this prediction.
Predicted class: 00-wack
Model is 48.02% sure about this prediction.
Predicted class: 02-wack
Model is 56.08% sure about this prediction.
Predicted class: 02-wack
Model is 47.64% sure about this prediction.
Predicted class: 00-wack
Model is 39.89% sure about this prediction.
Predicted class: 00-wack
Model is 68.74% sure about this prediction.
Predicted class: 00-wack
Model is 73.54% sure about this prediction.
Predicted class: 00-wack
Model is 77.37% sure about this prediction.
Predicted class: 00-wack
Model is 79.69% sure about this prediction.
Predicted class: 00-wack
Model is 74.14% sure about this prediction.
Predicted class: 00-wack
Model is 80.06% sure about this prediction.
Predicted class: 00-wack
Model is 79.42% sure about this prediction.
Predicted class: 00-wack
Model is 80.69% sure about this prediction.
Predicted class: 00-wack
Model is 80.95% sure about this prediction.
Predicted class: 00-wack

```
Model is 77.03% sure about this prediction.  
Predicted class: 00-wack  
Model is 72.09% sure about this prediction.  
Predicted class: 00-wack  
Model is 77.19% sure about this prediction.  
Predicted class: 00-wack  
Model is 82.88% sure about this prediction.  
Predicted class: 00-wack  
Model is 82.23% sure about this prediction.  
Predicted class: 00-wack  
Model is 82.01% sure about this prediction.  
Predicted class: 00-wack  
Model is 78.02% sure about this prediction.  
Predicted class: 00-wack  
Model is 76.06% sure about this prediction.  
Predicted class: 00-wack  
Model is 75.00% sure about this prediction.  
Predicted class: 00-wack  
Model is 77.22% sure about this prediction.  
Predicted class: 00-wack  
Model is 79.80% sure about this prediction.  
Miss!
```

```
score is: 0, round count is 2  
capturing frames...  
random led is: 2  
Mole is on 02-wack  
amount of frames is 48  
Predicted class: 00-wack  
Model is 74.66% sure about this prediction.  
Predicted class: 00-wack  
Model is 78.60% sure about this prediction.  
Predicted class: 00-wack  
Model is 76.13% sure about this prediction.  
Predicted class: 00-wack  
Model is 69.64% sure about this prediction.  
Predicted class: 00-wack  
Model is 74.93% sure about this prediction.  
Predicted class: 00-wack  
Model is 76.66% sure about this prediction.  
Predicted class: 00-wack  
Model is 75.18% sure about this prediction.  
Predicted class: 00-wack  
Model is 71.22% sure about this prediction.  
Predicted class: 00-wack  
Model is 70.12% sure about this prediction.  
Predicted class: 00-wack  
Model is 80.30% sure about this prediction.  
Predicted class: 00-wack  
Model is 76.49% sure about this prediction.  
Predicted class: 00-wack  
Model is 78.41% sure about this prediction.  
Predicted class: 00-wack
```

Model is 68.00% sure about this prediction.
Predicted class: 00-wack
Model is 70.06% sure about this prediction.
Predicted class: 00-wack
Model is 71.96% sure about this prediction.
Predicted class: 00-wack
Model is 79.54% sure about this prediction.
Predicted class: 00-wack
Model is 63.69% sure about this prediction.
Predicted class: 00-wack
Model is 65.03% sure about this prediction.
Predicted class: 00-wack
Model is 67.80% sure about this prediction.
Predicted class: 00-wack
Model is 55.77% sure about this prediction.
Predicted class: 00-wack
Model is 63.24% sure about this prediction.
Predicted class: 00-wack
Model is 71.36% sure about this prediction.
Predicted class: 00-wack
Model is 54.87% sure about this prediction.
Predicted class: 02-wack
Model is 65.95% sure about this prediction.
Predicted class: 02-wack
Model is 73.56% sure about this prediction.
Predicted class: 02-wack
Model is 34.64% sure about this prediction.
Predicted class: 01-wack
Model is 34.34% sure about this prediction.
Predicted class: 02-wack
Model is 36.68% sure about this prediction.
Predicted class: 00-wack
Model is 32.87% sure about this prediction.
Predicted class: 00-wack
Model is 49.54% sure about this prediction.
Predicted class: 02-wack
Model is 45.79% sure about this prediction.
Predicted class: 02-wack
Model is 36.86% sure about this prediction.
Predicted class: 02-wack
Model is 39.76% sure about this prediction.
Predicted class: 02-wack
Model is 34.39% sure about this prediction.
Predicted class: 00-wack
Model is 48.98% sure about this prediction.
Predicted class: 02-wack
Model is 69.87% sure about this prediction.
Predicted class: 02-wack
Model is 88.33% sure about this prediction.
Predicted class: 02-wack
Model is 90.98% sure about this prediction.
Predicted class: 02-wack
Model is 84.30% sure about this prediction.
Predicted class: 02-wack

```
Model is 84.32% sure about this prediction.  
Predicted class: 02-wack  
Model is 84.08% sure about this prediction.  
Predicted class: 02-wack  
Model is 86.74% sure about this prediction.  
Predicted class: 02-wack  
Model is 85.00% sure about this prediction.  
Predicted class: 02-wack  
Model is 81.11% sure about this prediction.  
Predicted class: 02-wack  
Model is 86.59% sure about this prediction.  
Predicted class: 02-wack  
Model is 87.10% sure about this prediction.  
Predicted class: 02-wack  
Model is 82.20% sure about this prediction.  
Predicted class: 02-wack  
Model is 89.16% sure about this prediction.  
Correct whack!
```

```
score is: 1, round count is 3  
capturing frames...  
random led is: 1  
Mole is on 01-wack  
amount of frames is 48  
Predicted class: 02-wack  
Model is 89.73% sure about this prediction.  
Predicted class: 02-wack  
Model is 90.15% sure about this prediction.  
Predicted class: 02-wack  
Model is 91.32% sure about this prediction.  
Predicted class: 02-wack  
Model is 92.30% sure about this prediction.  
Predicted class: 02-wack  
Model is 91.26% sure about this prediction.  
Predicted class: 02-wack  
Model is 87.43% sure about this prediction.  
Predicted class: 02-wack  
Model is 91.54% sure about this prediction.  
Predicted class: 02-wack  
Model is 91.30% sure about this prediction.  
Predicted class: 02-wack  
Model is 88.13% sure about this prediction.  
Predicted class: 02-wack  
Model is 91.06% sure about this prediction.  
Predicted class: 02-wack  
Model is 91.90% sure about this prediction.  
Predicted class: 02-wack  
Model is 92.37% sure about this prediction.  
Predicted class: 02-wack  
Model is 93.39% sure about this prediction.  
Predicted class: 02-wack  
Model is 90.26% sure about this prediction.  
Predicted class: 02-wack
```

Model is 90.54% sure about this prediction.
Predicted class: 02-wack
Model is 86.46% sure about this prediction.
Predicted class: 02-wack
Model is 86.06% sure about this prediction.
Predicted class: 02-wack
Model is 89.75% sure about this prediction.
Predicted class: 02-wack
Model is 89.97% sure about this prediction.
Predicted class: 02-wack
Model is 90.82% sure about this prediction.
Predicted class: 02-wack
Model is 80.73% sure about this prediction.
Predicted class: 02-wack
Model is 86.50% sure about this prediction.
Predicted class: 02-wack
Model is 79.69% sure about this prediction.
Predicted class: 02-wack
Model is 66.81% sure about this prediction.
Predicted class: 02-wack
Model is 81.65% sure about this prediction.
Predicted class: 02-wack
Model is 82.66% sure about this prediction.
Predicted class: 02-wack
Model is 92.17% sure about this prediction.
Predicted class: 02-wack
Model is 43.54% sure about this prediction.
Predicted class: 02-wack
Model is 53.55% sure about this prediction.
Predicted class: 02-wack
Model is 53.24% sure about this prediction.
Predicted class: 02-wack
Model is 45.27% sure about this prediction.
Predicted class: 01-wack
Model is 62.25% sure about this prediction.
Predicted class: 01-wack
Model is 51.19% sure about this prediction.
Predicted class: 01-wack
Model is 33.11% sure about this prediction.
Predicted class: 02-wack
Model is 33.16% sure about this prediction.
Predicted class: 01-wack
Model is 36.70% sure about this prediction.
Predicted class: 01-wack
Model is 33.65% sure about this prediction.
Predicted class: 00-wack
Model is 37.15% sure about this prediction.
Predicted class: 02-wack
Model is 35.07% sure about this prediction.
Predicted class: 02-wack
Model is 39.99% sure about this prediction.
Predicted class: 01-wack
Model is 45.51% sure about this prediction.
Predicted class: 02-wack

```
Model is 51.80% sure about this prediction.  
Predicted class: 01-wack  
Model is 69.84% sure about this prediction.  
Predicted class: 01-wack  
Model is 47.13% sure about this prediction.  
Predicted class: 02-wack  
Model is 49.90% sure about this prediction.  
Predicted class: 01-wack  
Model is 49.22% sure about this prediction.  
Predicted class: 01-wack  
Model is 54.65% sure about this prediction.  
Predicted class: 02-wack  
Model is 56.98% sure about this prediction.  
Correct whack!
```

```
score is: 2, round count is 4  
capturing frames...  
random led is: 3  
Mole is on 10-wack  
amount of frames is 47  
Predicted class: 02-wack  
Model is 55.02% sure about this prediction.  
Predicted class: 01-wack  
Model is 52.97% sure about this prediction.  
Predicted class: 02-wack  
Model is 48.18% sure about this prediction.  
Predicted class: 01-wack  
Model is 47.95% sure about this prediction.  
Predicted class: 01-wack  
Model is 54.25% sure about this prediction.  
Predicted class: 01-wack  
Model is 51.35% sure about this prediction.  
Predicted class: 01-wack  
Model is 53.99% sure about this prediction.  
Predicted class: 01-wack  
Model is 52.20% sure about this prediction.  
Predicted class: 02-wack  
Model is 48.53% sure about this prediction.  
Predicted class: 01-wack  
Model is 54.94% sure about this prediction.  
Predicted class: 02-wack  
Model is 51.29% sure about this prediction.  
Predicted class: 02-wack  
Model is 59.05% sure about this prediction.  
Predicted class: 02-wack  
Model is 59.90% sure about this prediction.  
Predicted class: 02-wack  
Model is 53.30% sure about this prediction.  
Predicted class: 01-wack  
Model is 48.57% sure about this prediction.  
Predicted class: 02-wack  
Model is 53.93% sure about this prediction.  
Predicted class: 01-wack
```

Model is 48.37% sure about this prediction.
Predicted class: 01-wack
Model is 48.37% sure about this prediction.
Predicted class: 02-wack
Model is 64.62% sure about this prediction.
Predicted class: 02-wack
Model is 60.41% sure about this prediction.
Predicted class: 02-wack
Model is 55.01% sure about this prediction.
Predicted class: 01-wack
Model is 48.92% sure about this prediction.
Predicted class: 01-wack
Model is 59.29% sure about this prediction.
Predicted class: 01-wack
Model is 50.98% sure about this prediction.
Predicted class: 02-wack
Model is 49.82% sure about this prediction.
Predicted class: 01-wack
Model is 57.83% sure about this prediction.
Predicted class: 01-wack
Model is 62.81% sure about this prediction.
Predicted class: 01-wack
Model is 64.34% sure about this prediction.
Predicted class: 01-wack
Model is 59.75% sure about this prediction.
Predicted class: 01-wack
Model is 62.96% sure about this prediction.
Predicted class: 01-wack
Model is 46.64% sure about this prediction.
Predicted class: 02-wack
Model is 46.00% sure about this prediction.
Predicted class: 02-wack
Model is 53.89% sure about this prediction.
Predicted class: 01-wack
Model is 58.92% sure about this prediction.
Predicted class: 01-wack
Model is 62.06% sure about this prediction.
Predicted class: 01-wack
Model is 74.31% sure about this prediction.
Predicted class: 01-wack
Model is 58.34% sure about this prediction.
Predicted class: 01-wack
Model is 45.89% sure about this prediction.
Predicted class: 01-wack
Model is 33.36% sure about this prediction.
Predicted class: 00-wack
Model is 40.20% sure about this prediction.
Predicted class: 00-wack
Model is 68.91% sure about this prediction.
Predicted class: 00-wack
Model is 68.04% sure about this prediction.
Predicted class: 00-wack
Model is 74.38% sure about this prediction.
Predicted class: 00-wack

```
Model is 67.48% sure about this prediction.  
Predicted class: 00-wack  
Model is 77.92% sure about this prediction.  
Predicted class: 00-wack  
Model is 65.56% sure about this prediction.  
Predicted class: 00-wack  
Model is 81.17% sure about this prediction.  
Miss!
```

```
score is: 2, round count is 5
```

Code 31: Model two test four

```
laris@raspberrypi:~/Desktop/whackamole $ python game.py  
WARNING:absl:Compiled the loaded model, but the compiled metrics have yet to be built. ^model.compile_<br>starting the game  
capturing frames...  
random led is: 1  
Mole is on 01-wack  
amount of frames is 20  
Predicted class: 01-wack  
Model is 87.38% sure about this prediction.  
Predicted class: 01-wack  
Model is 91.98% sure about this prediction.  
Predicted class: 01-wack  
Model is 82.77% sure about this prediction.  
Predicted class: 01-wack  
Model is 90.99% sure about this prediction.  
Predicted class: 02-wack  
Model is 55.64% sure about this prediction.  
Predicted class: 01-wack  
Model is 49.38% sure about this prediction.  
Predicted class: 02-wack  
Model is 71.69% sure about this prediction.  
Predicted class: 02-wack  
Model is 59.85% sure about this prediction.  
Predicted class: 02-wack  
Model is 59.76% sure about this prediction.  
Predicted class: 02-wack  
Model is 52.93% sure about this prediction.  
Predicted class: 02-wack  
Model is 56.25% sure about this prediction.  
Predicted class: 02-wack  
Model is 65.70% sure about this prediction.  
Predicted class: 02-wack  
Model is 49.05% sure about this prediction.  
Predicted class: 02-wack  
Model is 64.64% sure about this prediction.  
Predicted class: 02-wack  
Model is 48.15% sure about this prediction.  
Predicted class: 02-wack  
Model is 62.03% sure about this prediction.
```

```
Predicted class: 01-wack
Model is 60.73% sure about this prediction.
Predicted class: 02-wack
Model is 66.60% sure about this prediction.
Predicted class: 01-wack
Model is 51.59% sure about this prediction.
Predicted class: 02-wack
Model is 58.82% sure about this prediction.
Correct whack!
```

```
score is: 1, round count is 1
capturing frames...
random led is: 0
Mole is on 00-wack
amount of frames is 35
Predicted class: 01-wack
Model is 69.88% sure about this prediction.
Predicted class: 01-wack
Model is 52.86% sure about this prediction.
Predicted class: 01-wack
Model is 56.04% sure about this prediction.
Predicted class: 01-wack
Model is 52.22% sure about this prediction.
Predicted class: 02-wack
Model is 55.21% sure about this prediction.
Predicted class: 01-wack
Model is 56.01% sure about this prediction.
Predicted class: 02-wack
Model is 53.82% sure about this prediction.
Predicted class: 02-wack
Model is 51.07% sure about this prediction.
Predicted class: 01-wack
Model is 49.39% sure about this prediction.
Predicted class: 01-wack
Model is 58.06% sure about this prediction.
Predicted class: 01-wack
Model is 62.21% sure about this prediction.
Predicted class: 01-wack
Model is 59.26% sure about this prediction.
Predicted class: 01-wack
Model is 77.04% sure about this prediction.
Predicted class: 02-wack
Model is 54.50% sure about this prediction.
Predicted class: 01-wack
Model is 54.59% sure about this prediction.
Predicted class: 01-wack
Model is 45.61% sure about this prediction.
Predicted class: 01-wack
Model is 48.22% sure about this prediction.
Predicted class: 02-wack
Model is 35.00% sure about this prediction.
Predicted class: 00-wack
Model is 82.40% sure about this prediction.
```

```
Predicted class: 00-wack
Model is 76.62% sure about this prediction.
Predicted class: 00-wack
Model is 86.23% sure about this prediction.
Predicted class: 00-wack
Model is 86.18% sure about this prediction.
Predicted class: 00-wack
Model is 87.90% sure about this prediction.
Predicted class: 00-wack
Model is 86.06% sure about this prediction.
Predicted class: 00-wack
Model is 70.52% sure about this prediction.
Predicted class: 00-wack
Model is 76.92% sure about this prediction.
Predicted class: 00-wack
Model is 85.66% sure about this prediction.
Predicted class: 00-wack
Model is 83.56% sure about this prediction.
Predicted class: 00-wack
Model is 81.67% sure about this prediction.
Predicted class: 00-wack
Model is 70.49% sure about this prediction.
Predicted class: 00-wack
Model is 80.68% sure about this prediction.
Predicted class: 00-wack
Model is 78.75% sure about this prediction.
Predicted class: 00-wack
Model is 84.63% sure about this prediction.
Predicted class: 00-wack
Model is 83.82% sure about this prediction.
Predicted class: 00-wack
Model is 77.52% sure about this prediction.
Correct whack!
```

```
score is: 2, round count is 2
capturing frames...
random led is: 0
Mole is on 00-wack
amount of frames is 46
Predicted class: 00-wack
Model is 66.92% sure about this prediction.
Predicted class: 00-wack
Model is 63.73% sure about this prediction.
Predicted class: 00-wack
Model is 71.63% sure about this prediction.
Predicted class: 00-wack
Model is 50.10% sure about this prediction.
Predicted class: 00-wack
Model is 49.24% sure about this prediction.
Predicted class: 00-wack
Model is 43.13% sure about this prediction.
Predicted class: 00-wack
Model is 48.00% sure about this prediction.
```

Predicted class: 00-wack
Model is 63.67% sure about this prediction.
Predicted class: 00-wack
Model is 59.73% sure about this prediction.
Predicted class: 00-wack
Model is 59.27% sure about this prediction.
Predicted class: 00-wack
Model is 68.35% sure about this prediction.
Predicted class: 00-wack
Model is 61.70% sure about this prediction.
Predicted class: 00-wack
Model is 55.85% sure about this prediction.
Predicted class: 00-wack
Model is 54.12% sure about this prediction.
Predicted class: 00-wack
Model is 59.95% sure about this prediction.
Predicted class: 00-wack
Model is 58.32% sure about this prediction.
Predicted class: 00-wack
Model is 67.14% sure about this prediction.
Predicted class: 00-wack
Model is 59.58% sure about this prediction.
Predicted class: 00-wack
Model is 68.61% sure about this prediction.
Predicted class: 00-wack
Model is 78.28% sure about this prediction.
Predicted class: 00-wack
Model is 77.96% sure about this prediction.
Predicted class: 00-wack
Model is 65.01% sure about this prediction.
Predicted class: 00-wack
Model is 43.56% sure about this prediction.
Predicted class: 00-wack
Model is 38.11% sure about this prediction.
Predicted class: 00-wack
Model is 42.80% sure about this prediction.
Predicted class: 02-wack
Model is 47.69% sure about this prediction.
Predicted class: 01-wack
Model is 46.43% sure about this prediction.
Predicted class: 01-wack
Model is 44.25% sure about this prediction.
Predicted class: 01-wack
Model is 45.72% sure about this prediction.
Predicted class: 01-wack
Model is 43.08% sure about this prediction.
Predicted class: 00-wack
Model is 49.33% sure about this prediction.
Predicted class: 00-wack
Model is 38.09% sure about this prediction.
Predicted class: 02-wack
Model is 36.92% sure about this prediction.
Predicted class: 00-wack
Model is 62.54% sure about this prediction.

```
Predicted class: 02-wack
Model is 44.82% sure about this prediction.
Predicted class: 02-wack
Model is 56.60% sure about this prediction.
Predicted class: 00-wack
Model is 59.35% sure about this prediction.
Predicted class: 00-wack
Model is 60.16% sure about this prediction.
Predicted class: 02-wack
Model is 34.54% sure about this prediction.
Predicted class: 00-wack
Model is 55.95% sure about this prediction.
Predicted class: 00-wack
Model is 33.22% sure about this prediction.
Predicted class: 00-wack
Model is 47.23% sure about this prediction.
Predicted class: 01-wack
Model is 35.44% sure about this prediction.
Predicted class: 01-wack
Model is 37.78% sure about this prediction.
Predicted class: 00-wack
Model is 47.53% sure about this prediction.
Predicted class: 01-wack
Model is 39.78% sure about this prediction.
Correct whack!
```

```
score is: 3, round count is 3
capturing frames...
random led is: 3
Mole is on 10-wack
amount of frames is 47
Predicted class: 00-wack
Model is 36.71% sure about this prediction.
Predicted class: 00-wack
Model is 50.34% sure about this prediction.
Predicted class: 00-wack
Model is 51.97% sure about this prediction.
Predicted class: 00-wack
Model is 36.74% sure about this prediction.
Predicted class: 00-wack
Model is 33.88% sure about this prediction.
Predicted class: 00-wack
Model is 57.55% sure about this prediction.
Predicted class: 00-wack
Model is 41.20% sure about this prediction.
Predicted class: 00-wack
Model is 74.36% sure about this prediction.
Predicted class: 00-wack
Model is 51.59% sure about this prediction.
Predicted class: 00-wack
Model is 66.39% sure about this prediction.
Predicted class: 00-wack
Model is 49.24% sure about this prediction.
```

Predicted class: 00-wack
Model is 43.01% sure about this prediction.
Predicted class: 00-wack
Model is 35.70% sure about this prediction.
Predicted class: 01-wack
Model is 37.65% sure about this prediction.
Predicted class: 01-wack
Model is 43.06% sure about this prediction.
Predicted class: 01-wack
Model is 37.96% sure about this prediction.
Predicted class: 01-wack
Model is 36.15% sure about this prediction.
Predicted class: 01-wack
Model is 36.03% sure about this prediction.
Predicted class: 00-wack
Model is 41.78% sure about this prediction.
Predicted class: 00-wack
Model is 36.02% sure about this prediction.
Predicted class: 01-wack
Model is 40.36% sure about this prediction.
Predicted class: 01-wack
Model is 48.58% sure about this prediction.
Predicted class: 01-wack
Model is 41.41% sure about this prediction.
Predicted class: 01-wack
Model is 41.86% sure about this prediction.
Predicted class: 00-wack
Model is 55.91% sure about this prediction.
Predicted class: 00-wack
Model is 41.22% sure about this prediction.
Predicted class: 00-wack
Model is 72.10% sure about this prediction.
Predicted class: 00-wack
Model is 43.68% sure about this prediction.
Predicted class: 00-wack
Model is 64.01% sure about this prediction.
Predicted class: 00-wack
Model is 59.71% sure about this prediction.
Predicted class: 01-wack
Model is 45.96% sure about this prediction.
Predicted class: 00-wack
Model is 47.83% sure about this prediction.
Predicted class: 00-wack
Model is 47.54% sure about this prediction.
Predicted class: 01-wack
Model is 44.14% sure about this prediction.
Predicted class: 01-wack
Model is 49.57% sure about this prediction.
Predicted class: 00-wack
Model is 81.30% sure about this prediction.
Predicted class: 00-wack
Model is 34.15% sure about this prediction.

```
Predicted class: 00-wack
Model is 36.14% sure about this prediction.
Predicted class: 00-wack
Model is 46.84% sure about this prediction.
Predicted class: 00-wack
Model is 62.06% sure about this prediction.
Predicted class: 02-wack
Model is 39.30% sure about this prediction.
Predicted class: 02-wack
Model is 35.19% sure about this prediction.
Predicted class: 01-wack
Model is 35.97% sure about this prediction.
Predicted class: 00-wack
Model is 56.86% sure about this prediction.
Predicted class: 00-wack
Model is 56.04% sure about this prediction.
Predicted class: 00-wack
Model is 55.09% sure about this prediction.
Miss!
```

```
score is: 3, round count is 4
capturing frames...
random led is: 0
Mole is on 00-wack
amount of frames is 48
Predicted class: 00-wack
Model is 57.99% sure about this prediction.
Predicted class: 00-wack
Model is 66.78% sure about this prediction.
Predicted class: 00-wack
Model is 53.69% sure about this prediction.
Predicted class: 00-wack
Model is 61.53% sure about this prediction.
Predicted class: 00-wack
Model is 65.54% sure about this prediction.
Predicted class: 00-wack
Model is 59.35% sure about this prediction.
Predicted class: 00-wack
Model is 60.47% sure about this prediction.
Predicted class: 00-wack
Model is 58.03% sure about this prediction.
Predicted class: 00-wack
Model is 50.74% sure about this prediction.
Predicted class: 00-wack
Model is 60.18% sure about this prediction.
Predicted class: 00-wack
Model is 64.59% sure about this prediction.
Predicted class: 00-wack
Model is 58.99% sure about this prediction.
Predicted class: 00-wack
Model is 55.52% sure about this prediction.
Predicted class: 00-wack
Model is 61.92% sure about this prediction.
```

Predicted class: 00-wack
Model is 71.37% sure about this prediction.
Predicted class: 00-wack
Model is 65.28% sure about this prediction.
Predicted class: 00-wack
Model is 65.78% sure about this prediction.
Predicted class: 00-wack
Model is 69.30% sure about this prediction.
Predicted class: 00-wack
Model is 71.68% sure about this prediction.
Predicted class: 00-wack
Model is 66.70% sure about this prediction.
Predicted class: 00-wack
Model is 73.15% sure about this prediction.
Predicted class: 00-wack
Model is 71.97% sure about this prediction.
Predicted class: 00-wack
Model is 69.45% sure about this prediction.
Predicted class: 00-wack
Model is 67.12% sure about this prediction.
Predicted class: 00-wack
Model is 59.21% sure about this prediction.
Predicted class: 00-wack
Model is 63.45% sure about this prediction.
Predicted class: 00-wack
Model is 82.18% sure about this prediction.
Predicted class: 00-wack
Model is 73.69% sure about this prediction.
Predicted class: 00-wack
Model is 74.60% sure about this prediction.
Predicted class: 00-wack
Model is 73.07% sure about this prediction.
Predicted class: 00-wack
Model is 72.35% sure about this prediction.
Predicted class: 00-wack
Model is 75.98% sure about this prediction.
Predicted class: 00-wack
Model is 71.56% sure about this prediction.
Predicted class: 00-wack
Model is 75.96% sure about this prediction.
Predicted class: 00-wack
Model is 71.81% sure about this prediction.
Predicted class: 00-wack
Model is 73.97% sure about this prediction.
Predicted class: 00-wack
Model is 78.02% sure about this prediction.
Predicted class: 00-wack
Model is 78.24% sure about this prediction.
Predicted class: 00-wack
Model is 79.42% sure about this prediction.
Predicted class: 00-wack
Model is 73.71% sure about this prediction.
Predicted class: 00-wack
Model is 76.27% sure about this prediction.

```
Predicted class: 00-wack
Model is 75.41% sure about this prediction.
Predicted class: 00-wack
Model is 77.77% sure about this prediction.
Predicted class: 00-wack
Model is 63.95% sure about this prediction.
Predicted class: 00-wack
Model is 62.04% sure about this prediction.
Predicted class: 00-wack
Model is 70.93% sure about this prediction.
Predicted class: 00-wack
Model is 75.40% sure about this prediction.
Predicted class: 00-wack
Model is 71.55% sure about this prediction.
Correct whack!
```

```
score is: 4, round count is 5
```

Code 32: Model two test five