

# Image Classification Game

This **Snap!** game uses **Nvidia Jetson** capability to classify images.

## Offline Snap! downloading

Please download and open Offline version of Snap! for our project. Go to <https://snap.berkeley.edu/offline> and follow the steps.

## Snap! files' downloading

Please open the link [Classification Game](#) to download our project on your computer. Probably you would see the xml in raw format. Click the right button of your mouse and save it on the disk.



## Web camera Image in Snap!

You can get picture from your web camera in Snap!.

- **video capture** block to enable video capturing.



- Change value of **set video transparency** block to 0 for clear image.




- **video snap on stage** block reports picture from stage.



## Connection to Jetson from Snap!


If you have not imported it yet, please download [jetson blocks](#) and import it to your Snap! project.



 following blocks.

- Use **connect to Jetson url** block to connect Jetson.

A Snap4Android block with a pink background. It contains the text "connect to jetson url" followed by a variable slot containing "ws://ip\_address:4040".

 You need **ip address** of Nvidia Jetson. You can use *ifconfig* command in a terminal to get **ip address**.

- Store the value of **jetson\_name** in a variable.


A Snap4Android block with an orange background. It contains the text "set jetson\_name" followed by a dropdown menu and the text "to dev-kit-20".

- Store the value of **connect to Jetson url** block in a variable for later use.

A Snap4Android block with an orange background. It contains the text "set jetson" followed by a dropdown menu, "to connect to jetson url", a "join" block, "ws://", a variable slot containing "jetson\_name", and ":4040".

## Response from classification

Here we will send **video snap on stage** to Jetson for processing. Jetson will respond back class name, confidence value and class ID.

 Only **class name** and **confidence value** will be used in this example. This project does not use **class ID**.

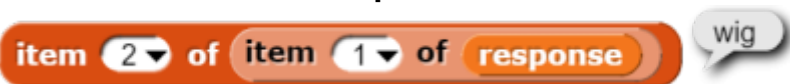
- Use **get response from Jetson** block to send **image** , and get **class name** and **confidence value**.
  - First input slot is for **jetson** variable that stores websocket data.
  - Second input slot is for **costume** you want to be classified by Nvidia Jetson.

A Snap4Android block with an orange background. It contains the text "set response" followed by a dropdown menu, "to send picture to jetson", a variable slot containing "jetson", and "video snap on Stage".

## Class name and confidence value

This section will demonstrate how to handle **response** variable to access **class name** and **confidence value**.

- **class name** is the 2nd item of 1st item of **response** block.

A Snap4Android block with an orange background. It contains the text "item 2" followed by a dropdown menu, "of item 1" followed by a dropdown menu, "of response". A speech bubble icon with the text "wig" is next to it.

- **confidence value** is 2nd item of 2nd item of **response** block.

```
round 100 × item 2 of item 2 of response
```



Multiply **confidence** value by 100 to get percentage of **confidence** .



You can create custom blocks, to get **class name** *get class name from response* and to get **confidence** *get confidence from response* .

## Speech functionality

**Speech functionality** is available as a library in Snap!. Select *export libraries* from settings then choose *speech module* .

- Use **join** block to create text like *I am **confidence** percent sure, it is **class name*** .

```
join I am round 100 × item 2 of item 2 of response percent-sure-it-is item 2 of item 1 of response
```

- Use **speak and wait** block to read text a loud.

```
speak join I am round 100 × item 2 of item 2 of response percent-sure-it-is item 2 of item 1 of response with en-GB accent and pitch 1 rate 1 and wait
```

## Repeat block for game

Last step is adding loop for the game.

- Use repeat block and put script inside of it.

```
repeat until key space pressed?
  set response to send picture to jetson jetson video snap on Stage
  speak join I am round 100 × item 2 of item 2 of response percent-sure-that-it-is item 2 of item 1 of response with en-GB accent and pitch 1 rate 1
  wait 3 secs
```



This example used **repeat until** block to break loop when *space* key pressed.  
You can download full game from [Github page of EOLab-  
HSRW](#).

From:  
<https://wiki.eolab.de/> - **HSRW EOLab Wiki**

Permanent link:  
<https://wiki.eolab.de/doku.php?id=snapcon2022:image-classification-game&rev=1659786735>

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