AI Project: runlinc image classification

Aim:

Upload image and use third party machine learning javascript to compute the classification of the image with runlinc

Background:

Image processing with artificial intelligence (AI) is relatively simple. It thinks like a human brain.
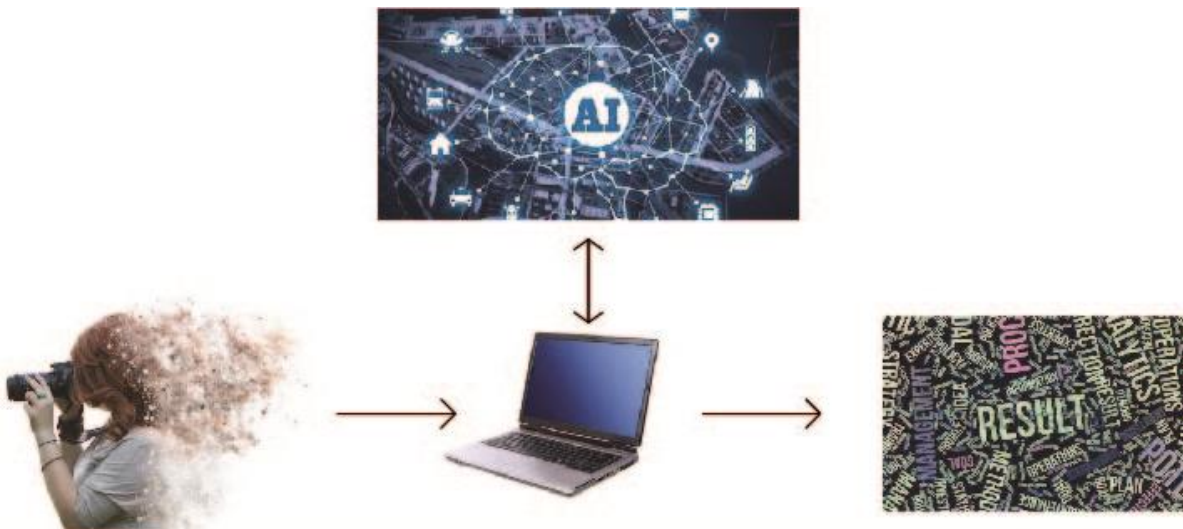

Figure 1: Image loaded into computer and through AI, result is shown at the end

Since we use the data base from third-party resource, we don't need to insert data by ourselves. We only need to know some syntaxes from that third-party resource for javascript.

On STEMSEL board:

Put red LED in C4, yellow in C5, and green in C3. Red LED represent Danger, yellow represent Euclid, and green represent safe.

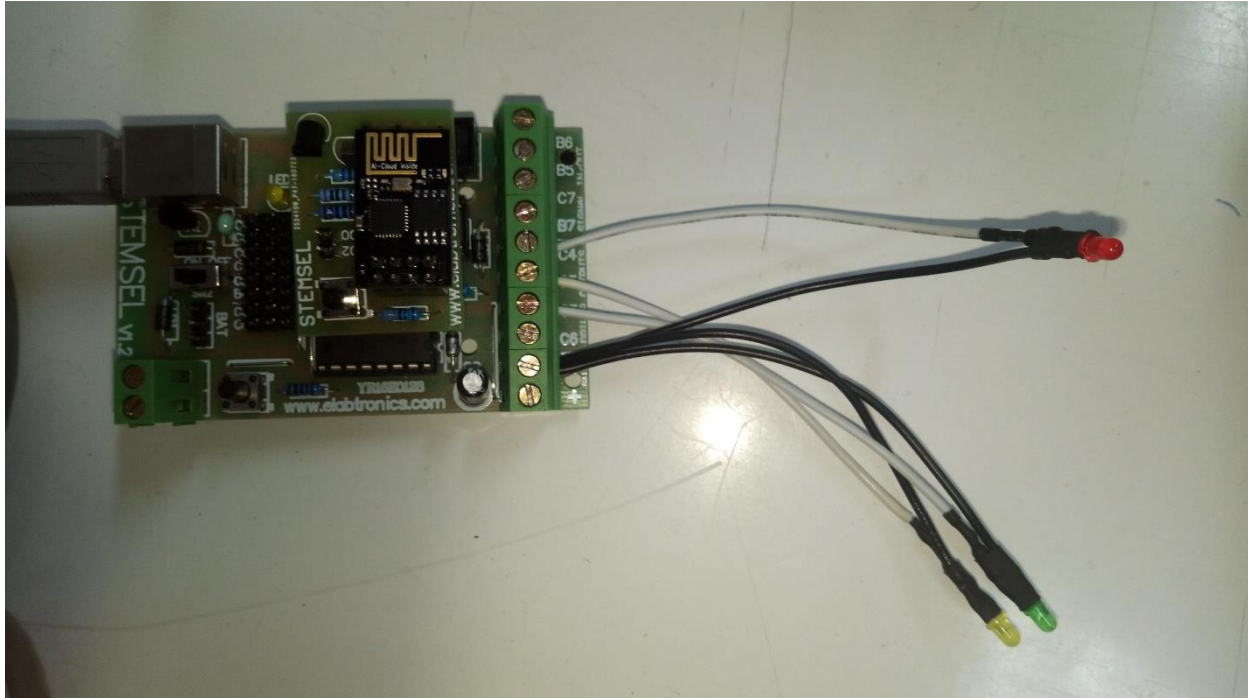Load Simplex_Wi-Fi_Controls8bit.bst into STEMSEL board and open your runlinc page with web browser.

Figure 2: Setup on STEMSEL board

On runlinc page:

Figure 3: Digital outputs and description

Code: Copy these codes into following section

HTML:

```
<script src="https://unpkg.com/ml5@0.1.3/dist/ml5.min.js"></script>
<h1>Image classification</h1>
<input id="load">
<input type="submit" onclick="imgProcess()">
<p>This labeled as:
   <span id="result">...</span> <br>with a confidence of
   <span id="probability">...</span></p>
<img src="" crossorigin="anonymous" id="image" width="400">
<p style="font-size:10px">supported by MobileNet</p>
```

Javascript:

```javascript
    var type = "";

    function imgProcess() {
      // The image we want to classify
      var loadIMG = document.getElementById("load");
      var image = document.getElementById('image');
      image.setAttribute("src", loadIMG.value);
      // The result tag in the HTML
      const result = document.getElementById('result');
      // The probability tag in the HTML
      const probability = document.getElementById('probability');

      // Initialize the Image Classifier method with MobileNet
      const classifier = ml5.imageClassifier('MobileNet', function () {
        console.log('Model Loaded!');
      });

      // Make a prediction with the selected image
      // This will return an array with a default of 10 options with their probabilities
      classifier.predict(image, async function (err, results) {
        result.innerText = results[0].className;
        type = results[0].className;
        probability.innerText = results[0].probability.toFixed(4);
        var utterance = new SpeechSynthesisUtterance(results[0].className);
        speechSynthesis.speak(utterance);

        switch (type) {
          case 'tiger shark, Galeocerdo cuvieri': //example:
https://www.dw.com/image/45601658_401.jpg
            turnOn(red);
            turnOff(green);
            turnOff(yellow);
            break;

          case 'matchstick':
            turnOn(green);
            turnOff(red);
            turnOff(yellow);
            break;

          case value:
            turnOn(yellow);
```
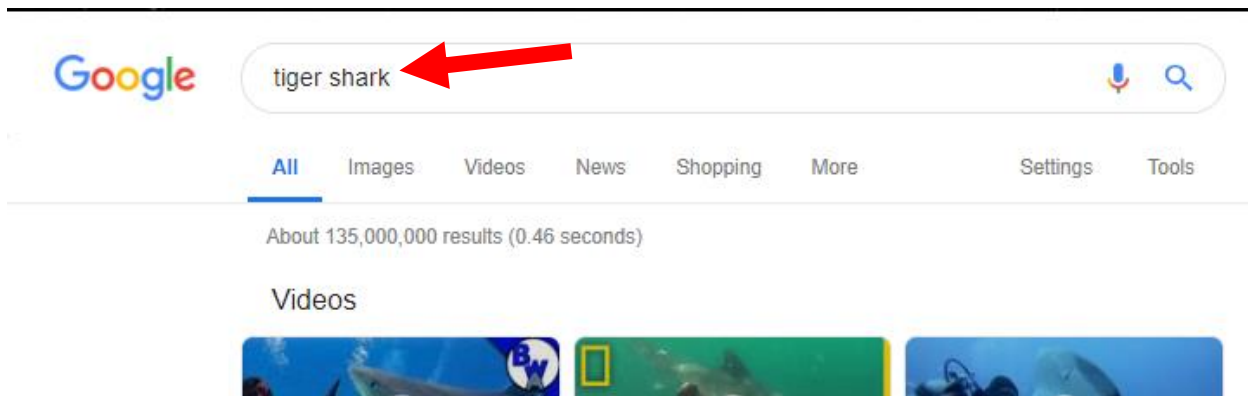
```
            turnOff(red);
            turnOff(green);
            break;

        default:
            break;
    }
  });
}
```
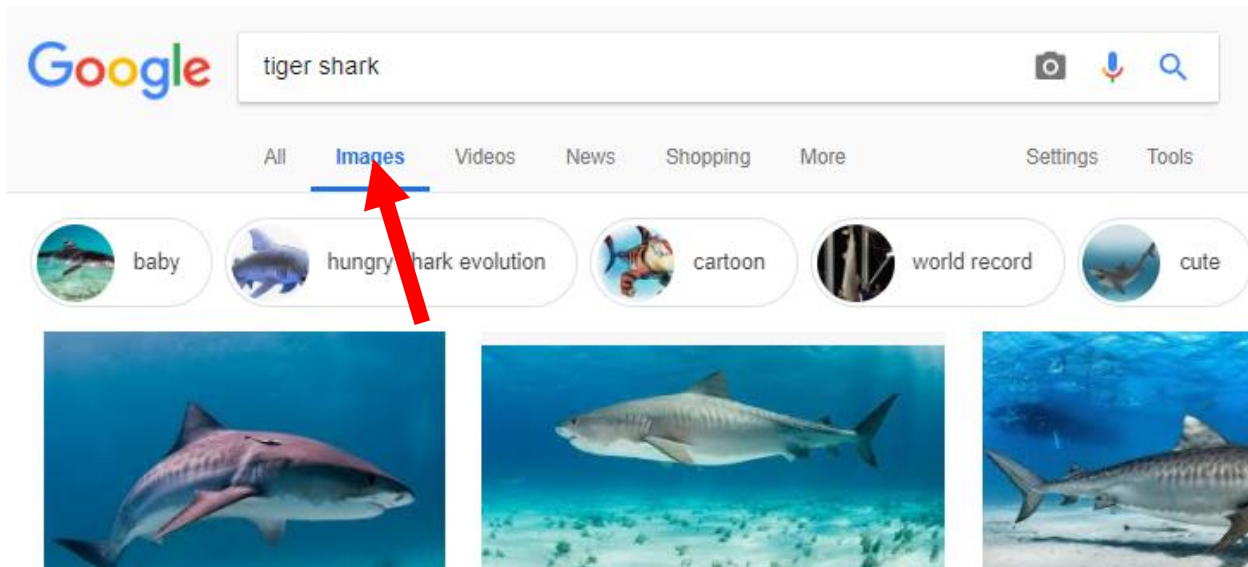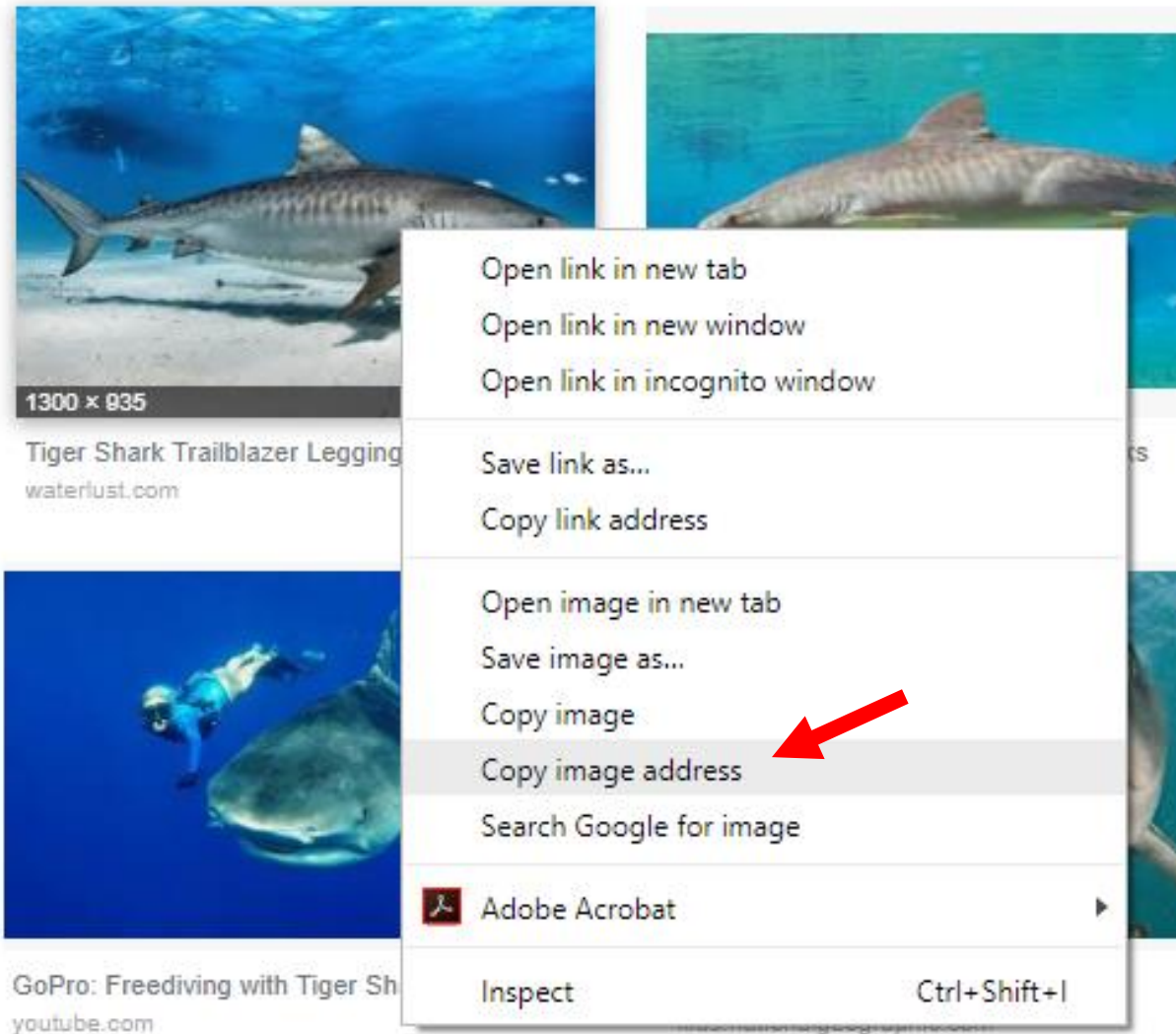
How to get image link:

Step 1: Search any image you like. Example: tiger shark

Step 2: Click on Image

Step 3: Right click on the image you like and select "Copy image address"

Step 4: Paste it in runlinc page and click submit