Step 1: Supplies You'll Need

The specifications are minimal. I've listed all the parts you'll need below:

* Arduino UNO
* Web cam
* 2 \* Servos
* Breadboard

Software Requirements:

* Python 2.7
* OpenCV
* Pyserial
* Numpy
* Haaecascade

After gathering everything, we can proceed to the installation step.

Step 2: Python Environment Setup

Therefore, we first require Python 2.7 to be running. First, download Python 2.7.14, then install it. Go to "Windows Search >> Type "IDLE" >> Hit Enter" to see if it has been installed correctly. A Python Shell ought to appear.

Python installation of "pyserial," "OpenCV," and "numpy":

Open CMD first, then enter the following codes:-

* pip install serial
* pip install opencv-python
* pip install numpy

These instructions will install the required modules. We can now begin the coding portion.

Step 3: Python Script

Making a new folder is the first step to writing code because all code must be saved in the same location. Create a new folder and give it whatever name you like. and copy the "Haarcascade" into the folder after downloading it from the link below.

The script is now ready to be written in notepad. Save it as "face.py" and place it in the same folder as haarcascade.

Now then continue by writing the Arduino code.

(Haarcascade and face.py are added to the github)

Step 4: Arduino Code

The arduino sketch is required to control the servo after the Python script is completed. Refer to the following code, copy it into the Arduino IDE, and save it as "servo.ino" in the same folder as "face.py" and "haarcascade." After uploading the code, carry out the subsequent step to establish the connections.

Step 5: Making Connections

The Circuit is not too complicated. Simply connect two servos to the Arduino.

* Vertical to Pin 5
* Horizontal to Pin 6
* Power to +5V
* Ground to GND

Step 6: Testing

* The last step when everything is finished is to test to see if it functions. Make sure the servos are correctly attached to the Arduino before running the test, then upload the sketch.
* Make sure to shut down the IDE after uploading the drawing so Python can connect.
* To run the code, open "face.py" in Python IDLE and press "F5". After connecting to Arduino, you should notice a window streaming the web cam after a short while. Now that your face has been detected by the algorithm, the servos will follow it.
* When you move the object, the servo should follow suit. Simply connect the camera to the servos at this point to make it move with the servos.

Thank you.