VISION RECOGNITION

A WORD ABOUT NAO'S VISION RECOGNITION

This curriculum relies heavily on NAO's vision recognition engine. To use vision recognition you must first make a database of images to recognize (we have done this for you with the cards on page 49 of this book). When you use the Vision Reco. box in choregraphe it takes 30 seconds or so to load the database. The robot will not do anything else during this time.

Some modifications have been made to this process for this particular curriculum. First, a vision recognition database has already been created for the cards. No additional databases are necessary to implement this curriculum, though you can learn how to create one on the next page. Additionally, the Vision Reco. box has been modified to wait 5 seconds between recognitions. This modification was made to make the games run more smoothly. You can modify this wait time using the process shown below.

LOADING THE DATABASE

To load the Module 3 Vision recognition database onto your robot, follow steps 1-3 on page 7. Then, click the ⟳ button and navigate to module3.vrd file. Select, then press the 🔄 button to load the database onto the robot. Repeat for all robots.

MODIFYING THE WAIT TIME

This process refers to the modified box available in the new Module 3 box library. If this library is not already loaded on your Choregraphe, you can add it by going to Edit → Preferences, pressing the plus sign next to the User's Box Libraries drop down menu and navigating to the appropriate file (module3-1.cbl. Press OK in the Preference pop-up box and a new Module 3 tab should appear in your box library.
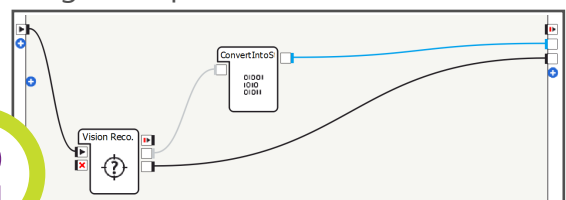
1 Drag the Vision Reco. box out from the new Module 3 box library. The box should appear as depicted below.
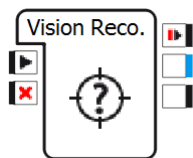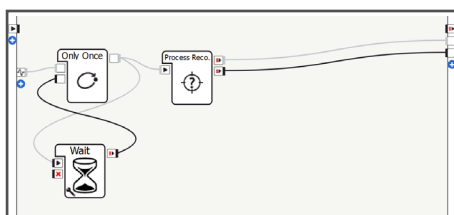

2 Double Click the box. You should see the following workspace:
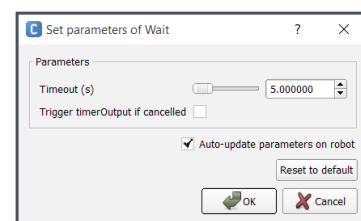

3 Double click the new Vision Reco. box. You should see the following workspace:

4 Press the wrench on the Wait box and adjust the time as desired.

CREATING YOUR OWN VISION DATABASE

Let me reiterate, you DO NOT need to create your own vision recognition database to run this curriculum. This section is here merely to provide guidance for those curious about how it is done, or if you want to add cards and objects of your own.
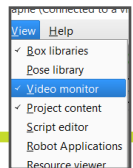
First we will show how to "learn" an object, then how to load a database onto the robot, then how to save that database and finally we will discuss which objects and images are good candidates for the robot to learn.
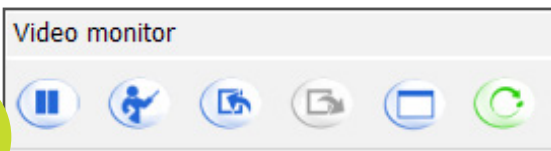
1 Connect to a real robot.

2 From the view dropdown menu, select Video Monitor

3 You should see a live stream from the robot's front camera. Additionally you should see the following menu bar:

4 The menu bar options are play/pause, Learn, Import Vision Database, Export Current Database, New Database and Send Current Database To Robot.

5 To learn a new object, place the object in front of the robot so you can see it in the video monitor. Press the learn button and wait for Choregraphe to take the picture. When you have the picture, click around the object you want to learn.
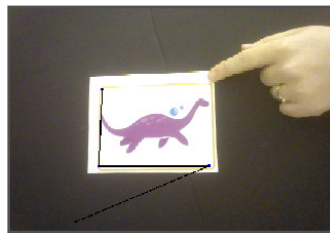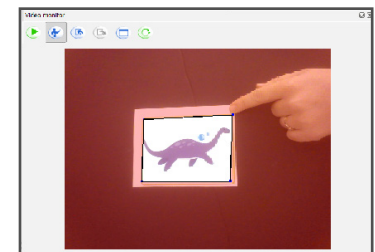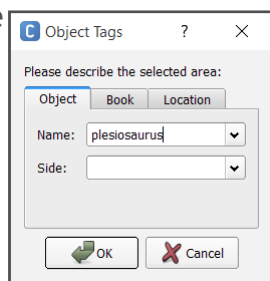
6 When you are done, the object should be outlined and everything outside the object should turn red.

7 An Object Tags pop-up box should appear automatically. This is where you type the name of the object. Be sure to note if you capitalize anything. To be safe, all words in this curriculum have been stored lowercase.

8 Continue learning objects until you have everything you want in the database. To push the database onto the robot, press the button.

To save the database on your computer, press the button.

To load a previously saved database, press the button.