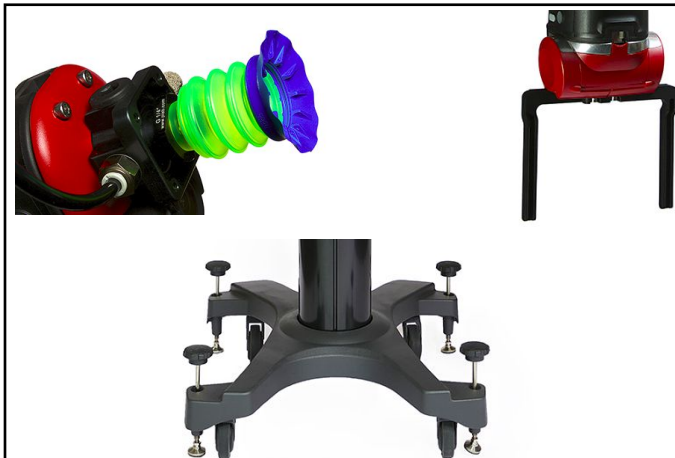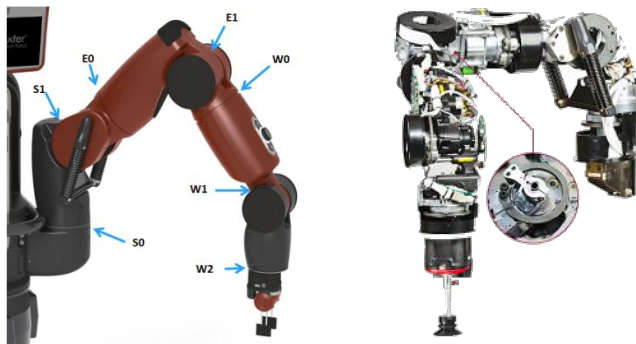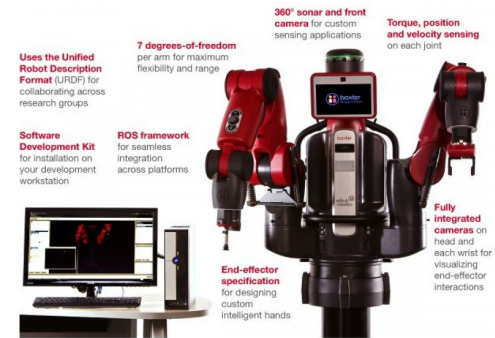# Programación del robot Baxter

Clase 12
Ing. Alexander López

Panel 1: BY THE NUMBERS

Baxter is cheaper and more quickly deployed than are traditional robots. In a decade, it might be able to tackle tens of millions of manufacturing and service jobs.

How much it costs

BAXTER:
$22,000, all in

TYPICAL INDUSTRIAL ROBOT:
$100,000
plus another
$200,000
or more in programming costs
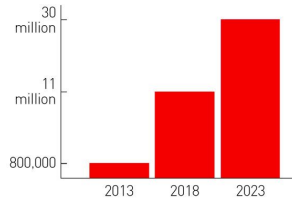
How long it takes to get running

BAXTER:
1 hour
to unpack and set up, plus five minutes to train on the first job

TYPICAL INDUSTRIAL ROBOT:
Months

How many jobs Baxter could potentially replace in the U.S.

Bar chart: 30 million, 11 million, 800,000 — years 2013, 2018, 2023

Panel 2: A ROBOT'S EMOTIONS

Brooks didn't set out to build a humanoid robot, but he found that giving Baxter a face was the most intuitive way to communicate information.

NEUTRAL — Ready for training

ASLEEP — On standby

CONCENTRATING — Learning a task

FOCUSED — Working away without a problem

SURPRISED — A human has approached

**CONFUSED** — Having trouble finding an object or otherwise completing a task

SAD — Given up trying to complete a task; there's a problem

Panel 3

Panel 4: HOW TO TRAIN A ROBOT, IN SEVEN EASY STEPS

Baxter can be trained by anyone, simply by guiding one or both of its arms and following menu prompts on the monitor that serves as Baxter's "head." Screen selections are made by using a sort of mouse built into Baxter's arm. Here's how to train Baxter to pick up widgets and stuff them into boxes:

**1.** Select training mode.
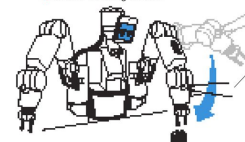
2. Grab one of Baxter's arms and swing its "hand" over the widget, and click to indicate that this is the object to be grabbed.
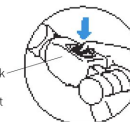
3. A camera in Baxter's hand will center on the widget and display the image on the screen; confirm with a click that this is the right sort of object.
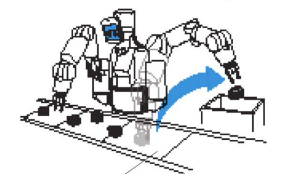
4. Baxter will grab the object. Swing the arm over the four corners of the box, and click to indicate this is the destination for the widget.
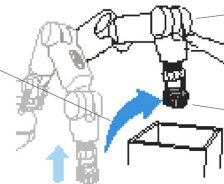
5. Click to confirm that Baxter is to insert the widget into the box.

6. Baxter will put the object into the box, using sensors to guide the widget in. Click to confirm that this is the entire task.

7. Run the conveyor. As long as widgets appear in roughly the same area, Baxter will identify, grab, and box them. Its facial expressions will indicate if it is struggling or working smoothly.

Crear workspace

Especificar la configuración del WS

Instalar las dependencias

Descargar e instalar los paquetes

Compilando los paquetes
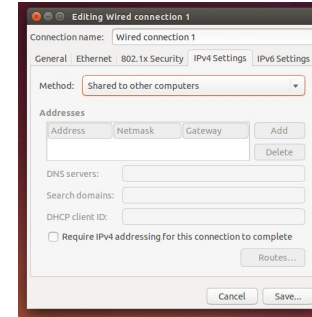

Instalar en el sistema

Estableciendo la conexión

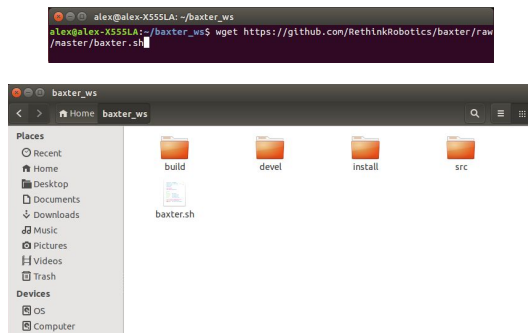## Estableciendo la conexión

Estableciendo la conexión

Estableciendo la conexión

Estableciendo la conexión

Lista de tópicos

Nodos listos en el robot

Nodos creados para la clase

¡Gracias!

¡La única pregunta tonta es la que no se hace!