Practical 3: Humanoid robots

What is it about?

Head first in humanoid robot programming! This practical last three weeks: this week, you will learn how to program the Aldebaran's Nao robot, using the Choregraphe IDE. Week 2 and 3 will focus on Plymouth's Drake robot: up to you to get it to walk!

Aims

At the end of these 3 sessions, you should have achieved the following targets:

· Let Nao recognising simple verbal commands (programmed in Choregraphe);

· Link verbal commands to let the robot walk or change direction (programmed in Choregraphe);

· Reflect on the walking implemented on the Nao;

· Implement a small demonstration on the Nao using a range of different behaviours in Choregraphe;

· Set-up and initialise the Drake robot;

· Try a range of difference gait parameters and assess their impact on the walking behaviour;

· Let the robot walk towards a visual target;

· Let the robot walk five meters on the red tape without assistance from a human handler.

> **Note**
>
> This practical is **not** assessed. We do not ask you to submit any report.
> Please note however that **you are required to attend all the laboratory practical sessions**.

Preliminary steps

We have 6 Nao robots. Please form groups of 3-4 people per robot.

Part I

Week 1: Nao programming

Step 1 – Install Choregraphe

You can use the USB stick that we have prepared for you.

Make sure you can successfully connect to the robot.

Step 2 – Programming challenges

Create programs to get the robot to:

1. say 'Hello World'

2. ask a question, and to wave if you answer 42

3. walk while being verbally guided ('forward', 'backward', 'left', 'right')

> **Note**
>
> You can find Choregraphe's documentation on Aldebaran website or on the DLE.

Step 3 – Mini project: design a multi-modal interaction with the robot

Within the remaining time, create a more engaging interaction with your robot.

Explore the available capabilities of the robot; feel free to use custom Python code if you need to; impress us!
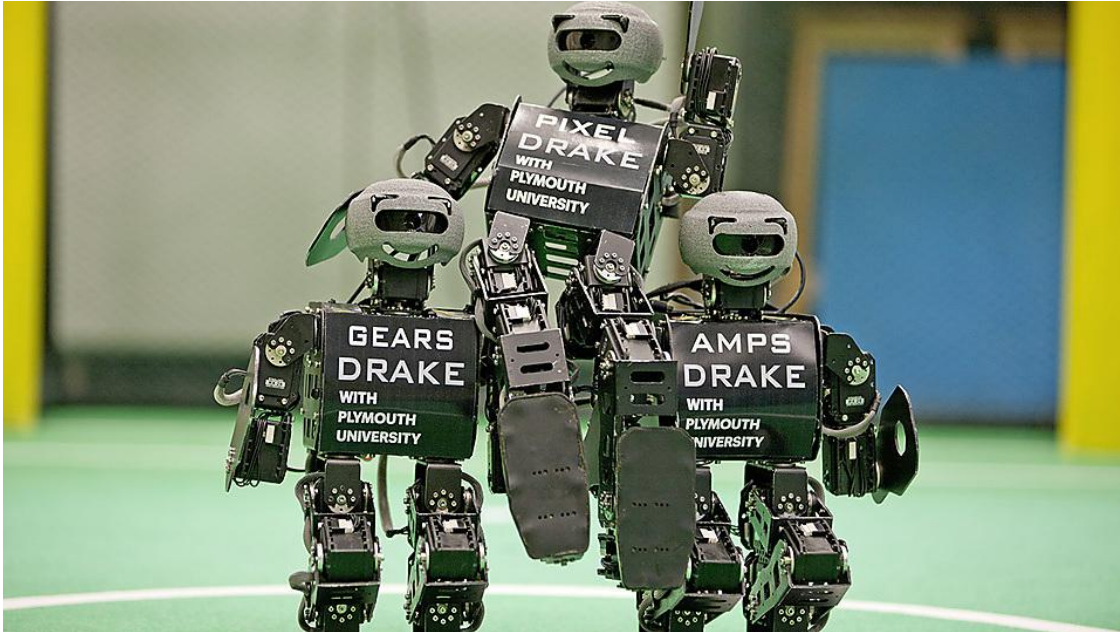
Examples:

- The robot greets and follows any face it detects
- Adventure story-telling where the human decides "what comes next"
- ...up to you!

Make a 2 mins video of your mini-project, upload it on YouTube and submit the link on the DLE to showcase it!

Part II

Weeks 2 & 3: Plymouth Drake robot

For this practical, please download and open the Drake robot manual on the DLE.