Strawbees®

Hour of Code

December 10th, 2020

Strawbees®

Featuring

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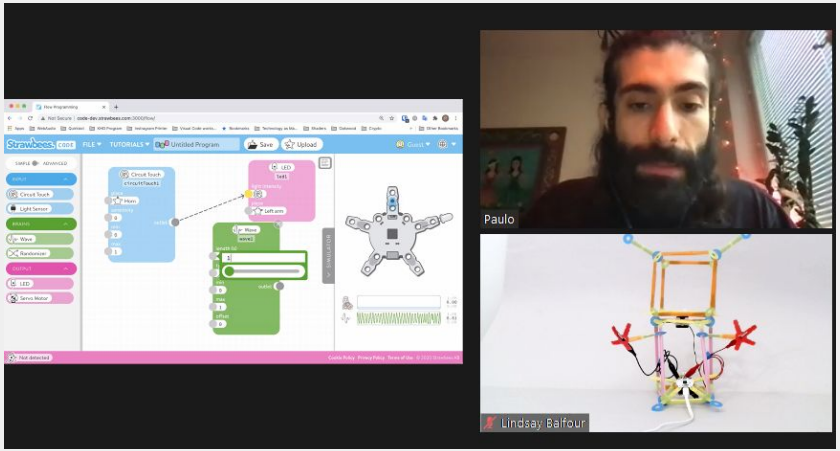
CTO
Sweden

About



Venture into Flow programming and coding with sine waves using the Friendbot. Learning to code objects more realistically as they usually don’t just start and stop instantly, and almost never move at a constant speed. You can participate in this session without a Quirkbot in hand previewing the CODE simulator. Test and execute your programs with the virtual servos and LED hardware and looking at waves.

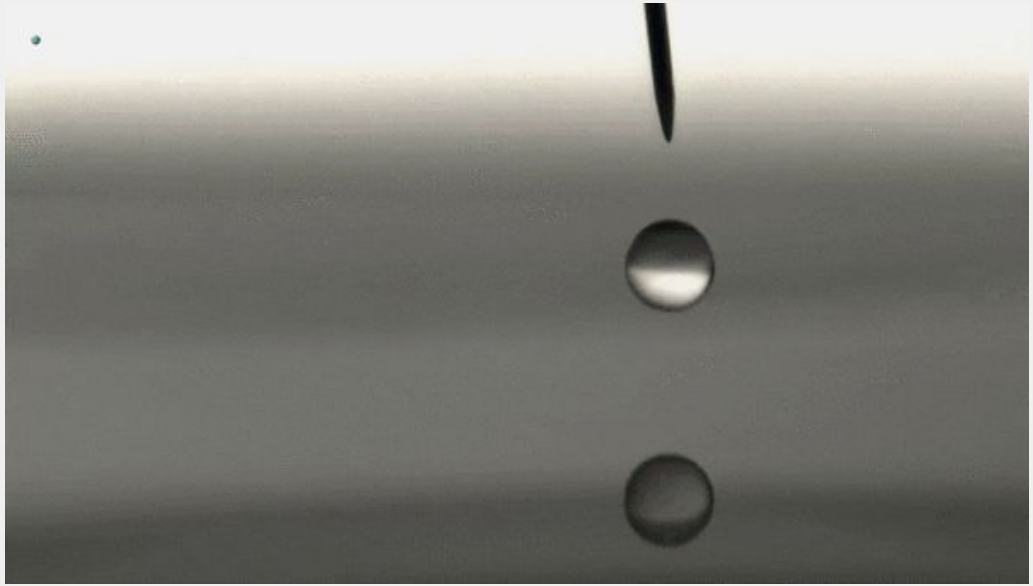
Hour of Code is a one-hour introduction to computer science, designed to demystify "code", to show that anybody can learn the basics, and to broaden participation in the field of computer science.

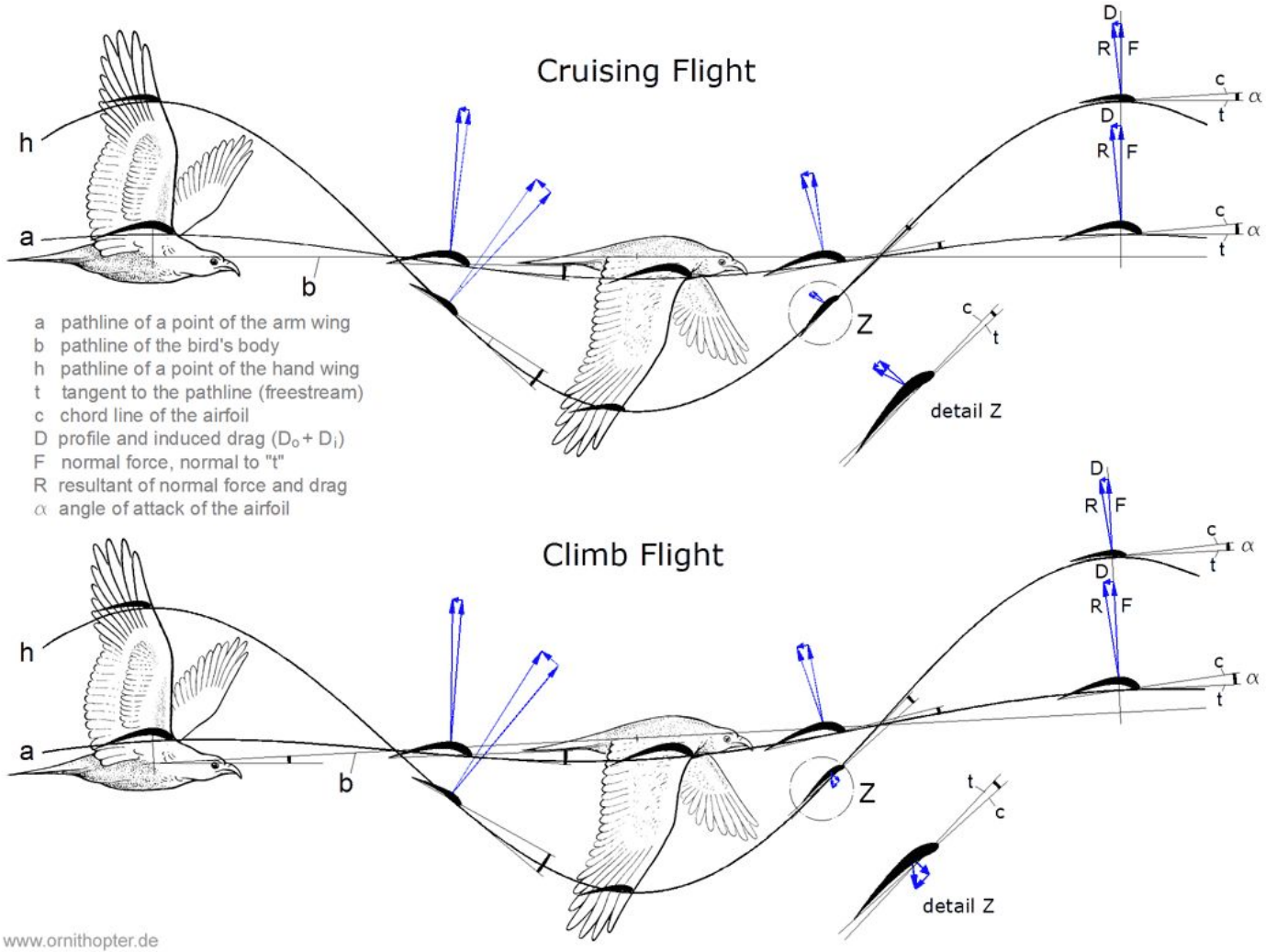
Hour of Code 2020

View Recording Here: https://youtu.be/2CzG-kGj4CE

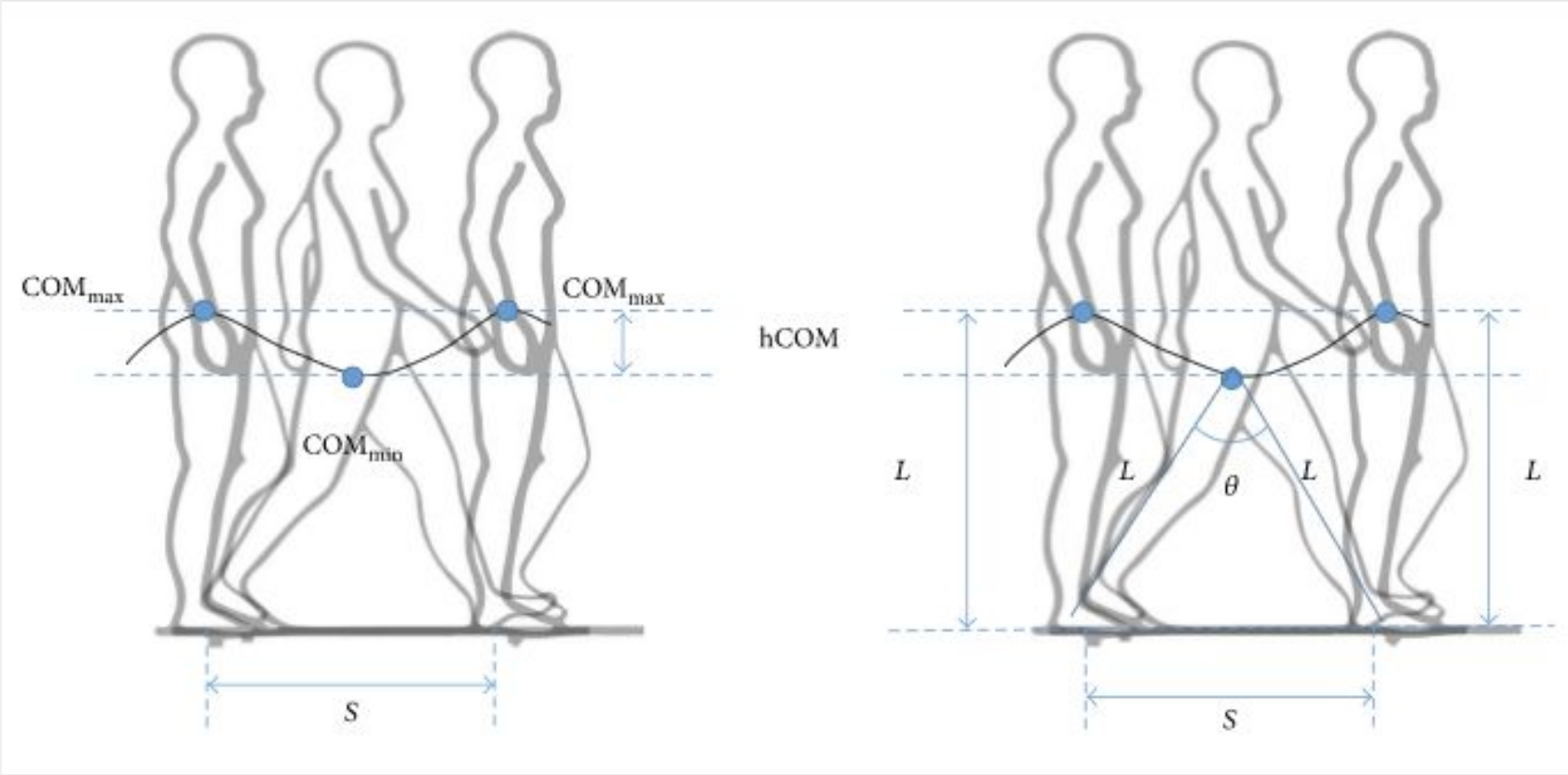
Waves in the Real World

Paulo introducing how we use waves as part of programming and how we see them in the real world. The literal waves of water rippling, to the motion of how a bird's wings flap, to the motion of your hands moving as you stroll.





www.ornithopter.de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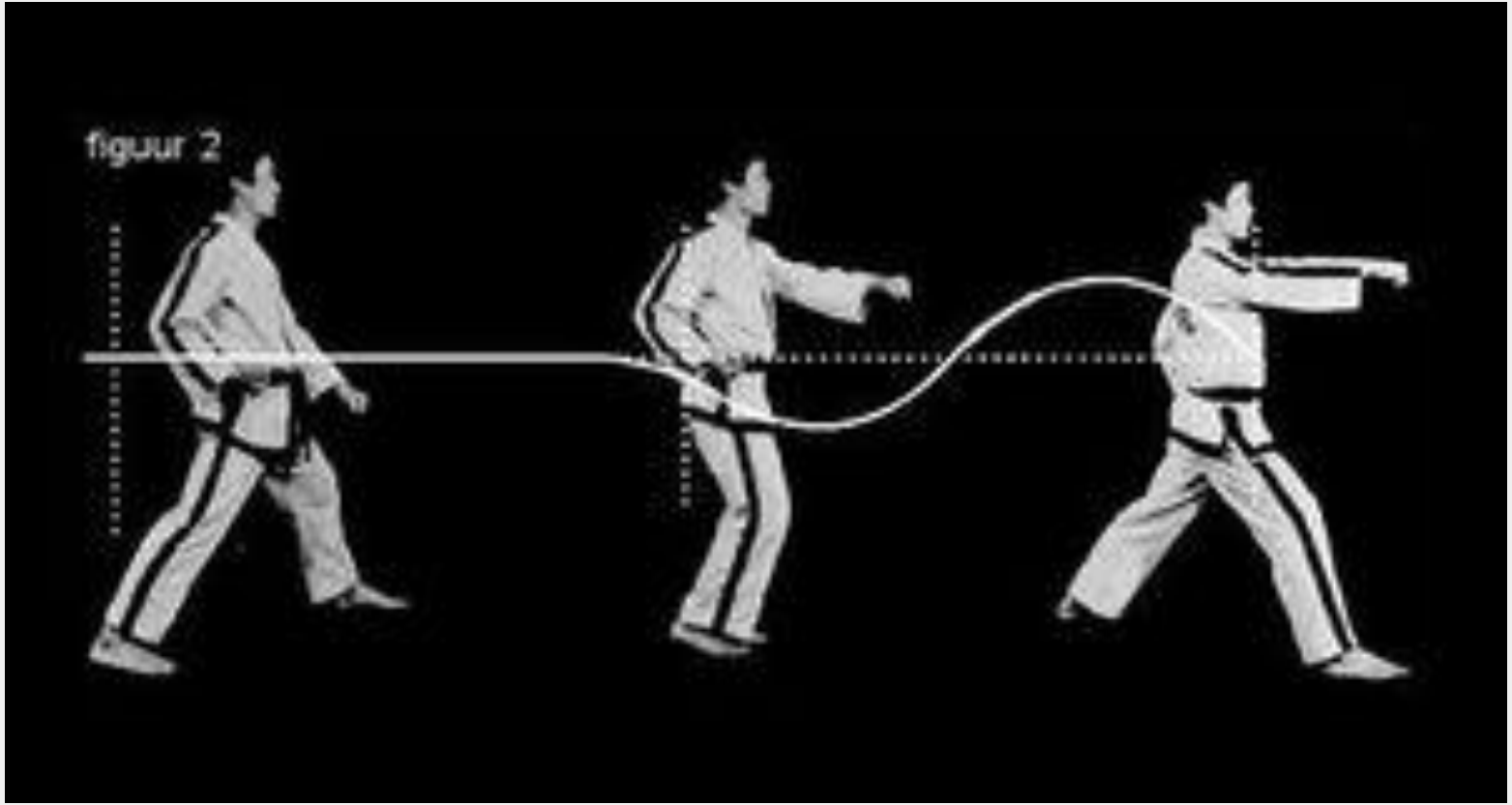
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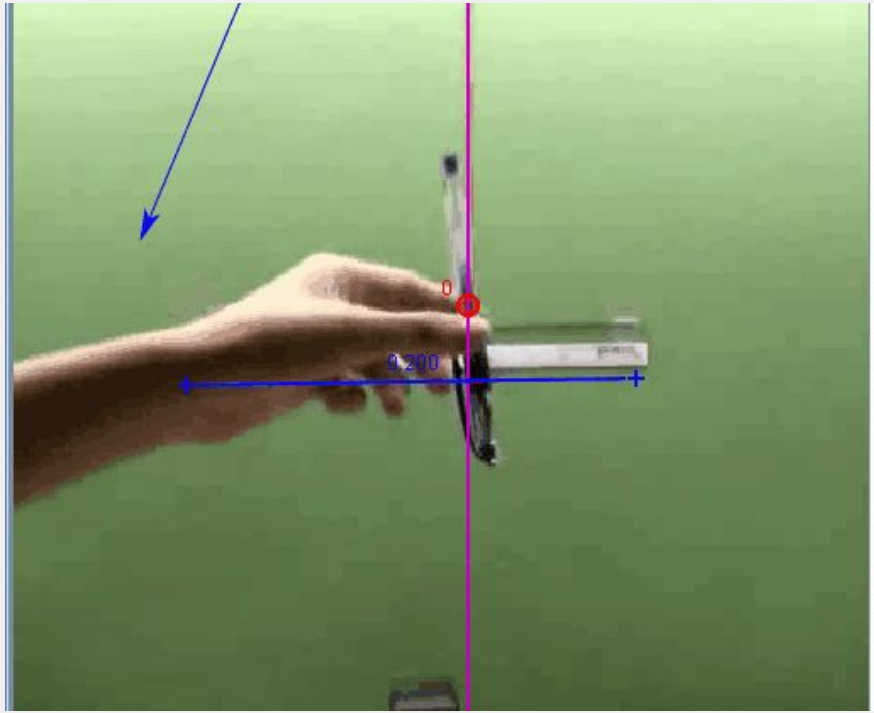
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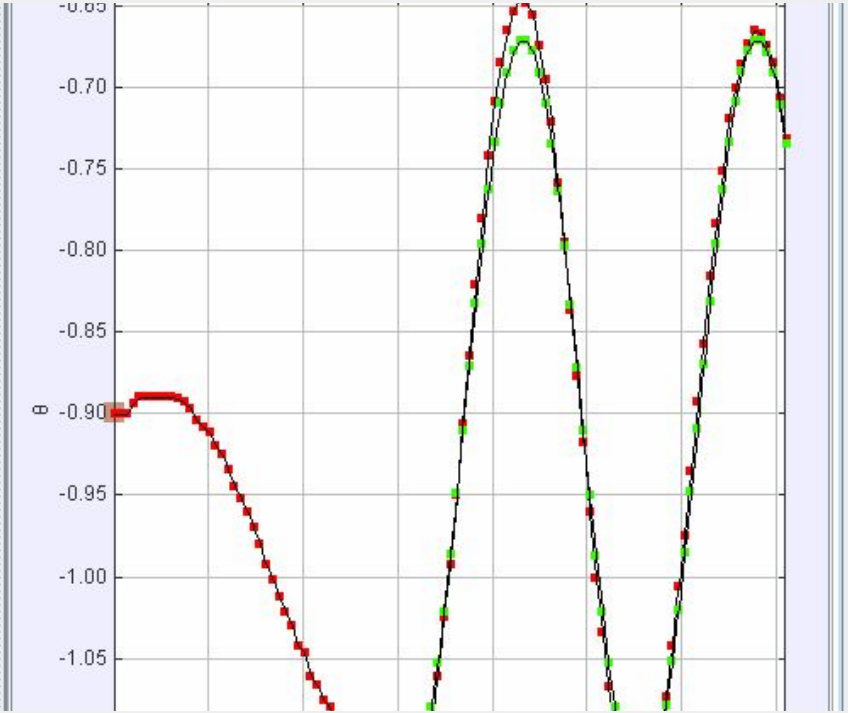
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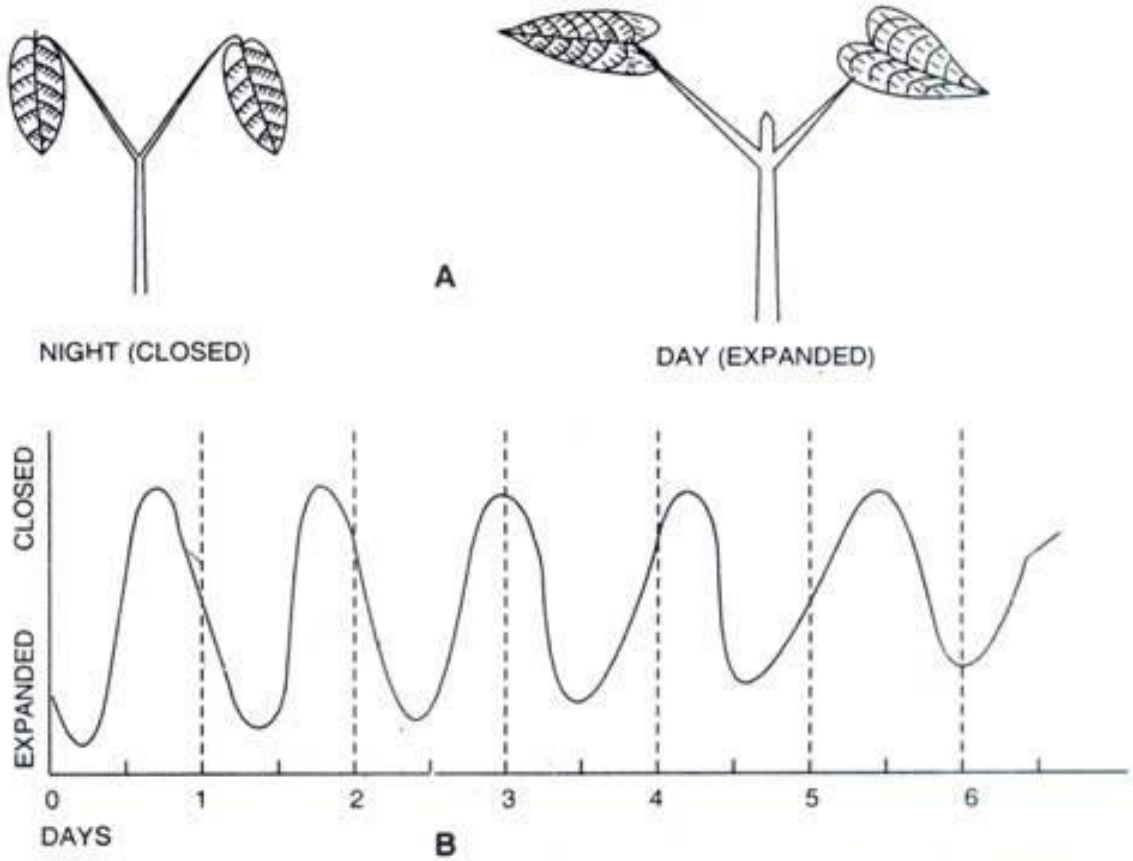
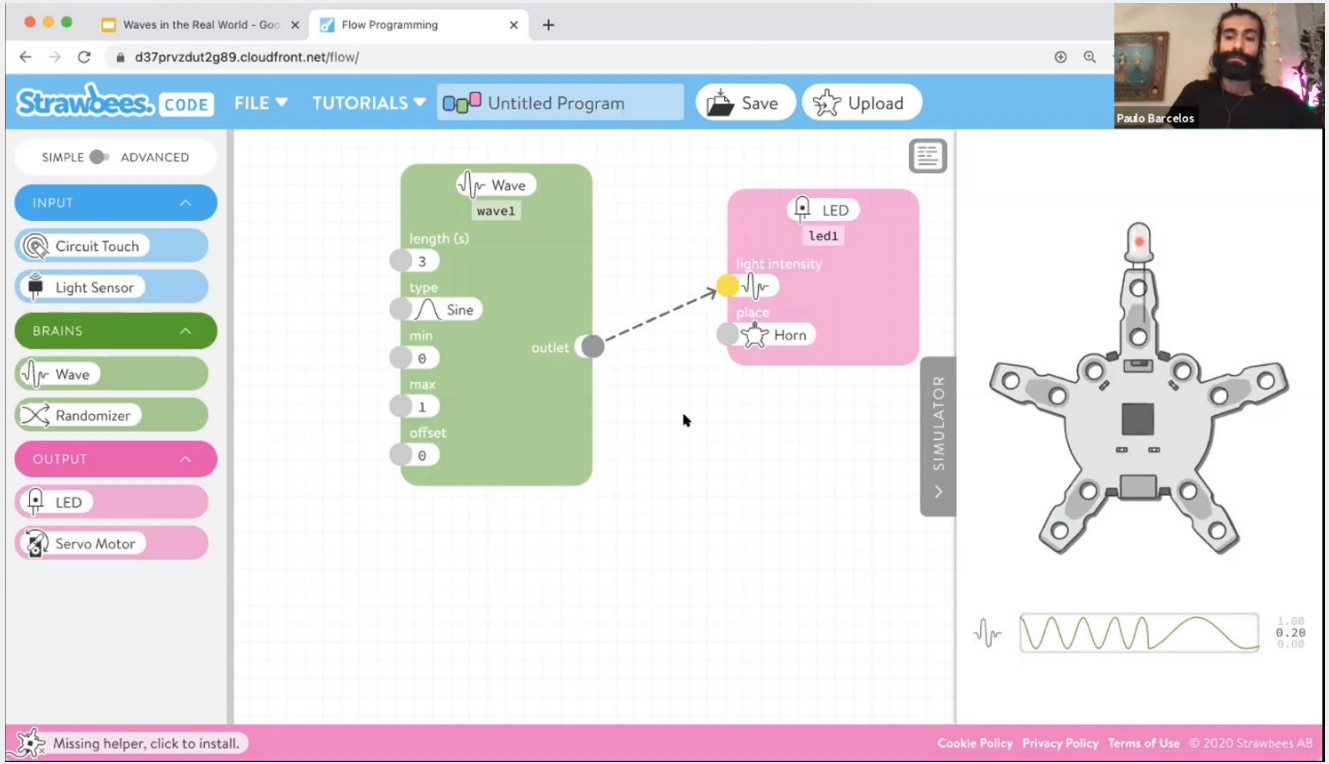


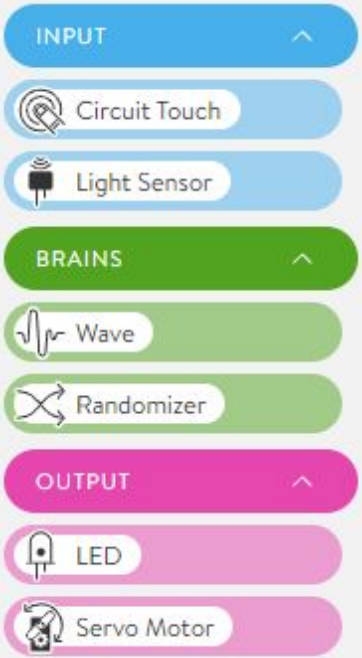
Fig. 22.1. Circadian plant rhythm. A. The positions of primary leaves of *Phaseolus multiflorus* during day and night. B. Graphic representation of leaf movements under uniform environmental conditions. The peaks refer to the closed leaves and troughs to the expanded leaves.

Strawbees CODE: Flow Programming

Paulo walked us through Flow Programming workspace, the different types of Nodes, and how they connect together. He focused on using the Brain - Wave Node to control the inputs such as the servo motor and LEDS. The simulator made it possible to think apply different shapes of waves for controlling the brightness and it's animation or the acceleration to deceleration in the servo's motion.



Types of Nodes



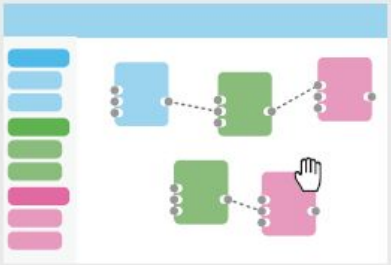
NODE CATEGORIES

There are three categories of nodes: INPUT, BRAINS or OUTPUT.
They are represented on your screen by boxes of different colors.

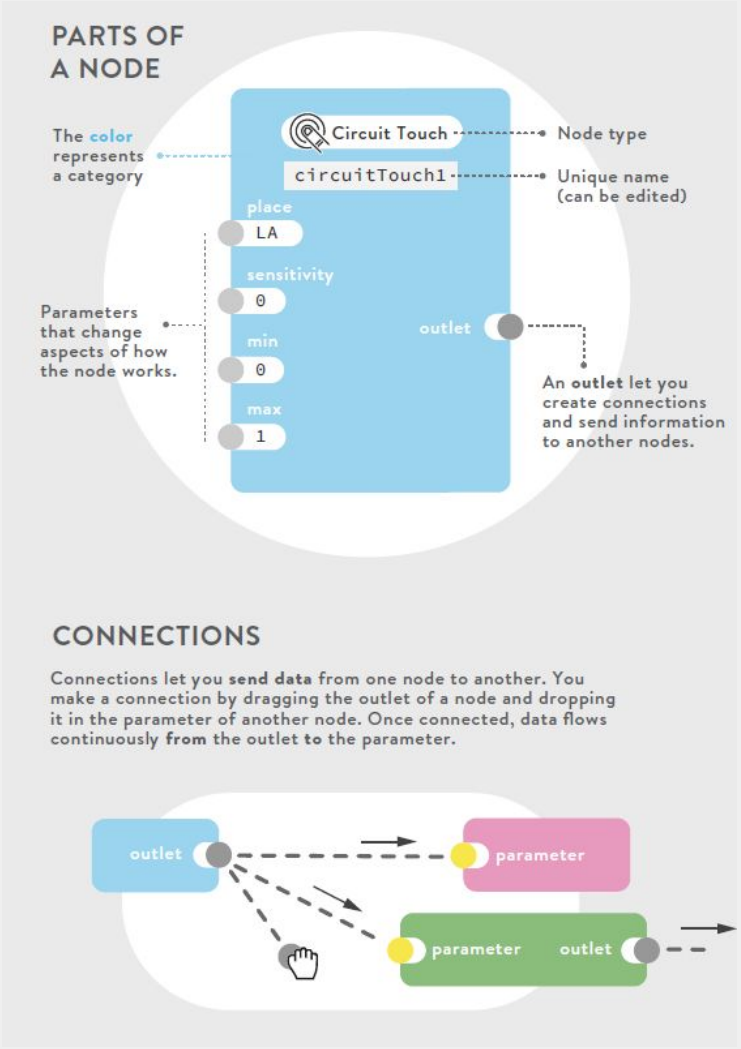
INPUT	BRAINS	OUTPUT
Information from the physical world.	Something that manipulates or generates information.	The ability to control something in the physical world.
For humans this can be: hearing, seeing or touching.	For humans this can be: thinking about something.	For humans this can be: moving your arms or talking.
For Quirkbots this is: reading different sensors like light or touch.	For Quirkbots this is: generating data, reading values, maths or logic.	For Quirkbots this is: moving motors, blinking LED lights, or typing on the keyboard.

PROGRAMMING WORKSPACE

All the available nodes are displayed in the menu on the left. Drag and drop a node from the menu onto the workspace to create your program. Nodes can be moved around, modified and connected as you like.



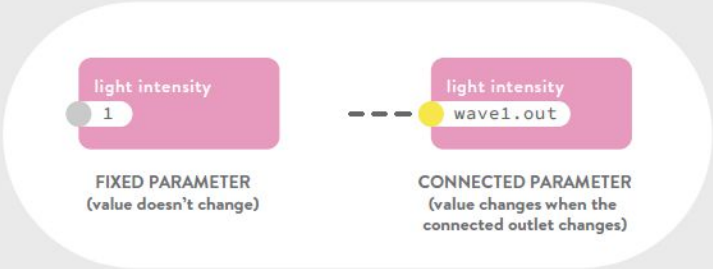
Node Parts


PARTS OF A NODE
The color represents a category
Circuit Touch
Node type
circuitTouch1
Unique name (can be edited)
place
LA
sensitivity
0
Parameters that change aspects of how the node works.
outlet
min
0
max
1
An outlet let you create connections and send information to another nodes.
CONNECTIONS
Connections let you send data from one node to another. You make a connection by dragging the outlet of a node and dropping it in the parameter of another node. Once connected, data flows continuously from the outlet to the parameter.
outlet
parameter
parameter
outlet

Parameters

PARAMETERS

Parameters hold **values** that are important to the node.
By changing the values you change how the node works.
You decide if a parameter is **fixed** or **connected** to an outlet.

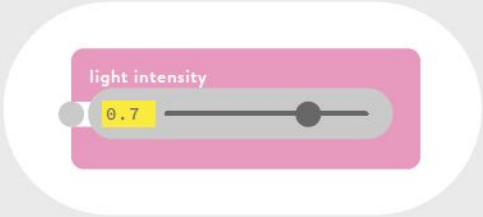


FIXED PARAMETER
(value doesn't change)

CONNECTED PARAMETER
(value changes when the connected outlet changes)

NUMBER PARAMETERS

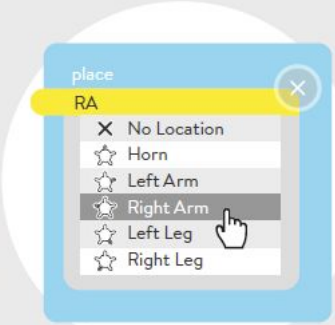
Many nodes have **number parameters.** You can set their value by using the slider or by typing directly into the box. Most numbers parameter go from **0 to 1**, enabling you to connect them directly to most outlets.



OPTION PARAMETERS

Some nodes have **option parameters.** You can select their value by clicking on a item from the **drop-down** list or by writing the exact name of the option in the box.

Many input and output nodes have a **place** option parameter that represents where they exist in the **physical world.**

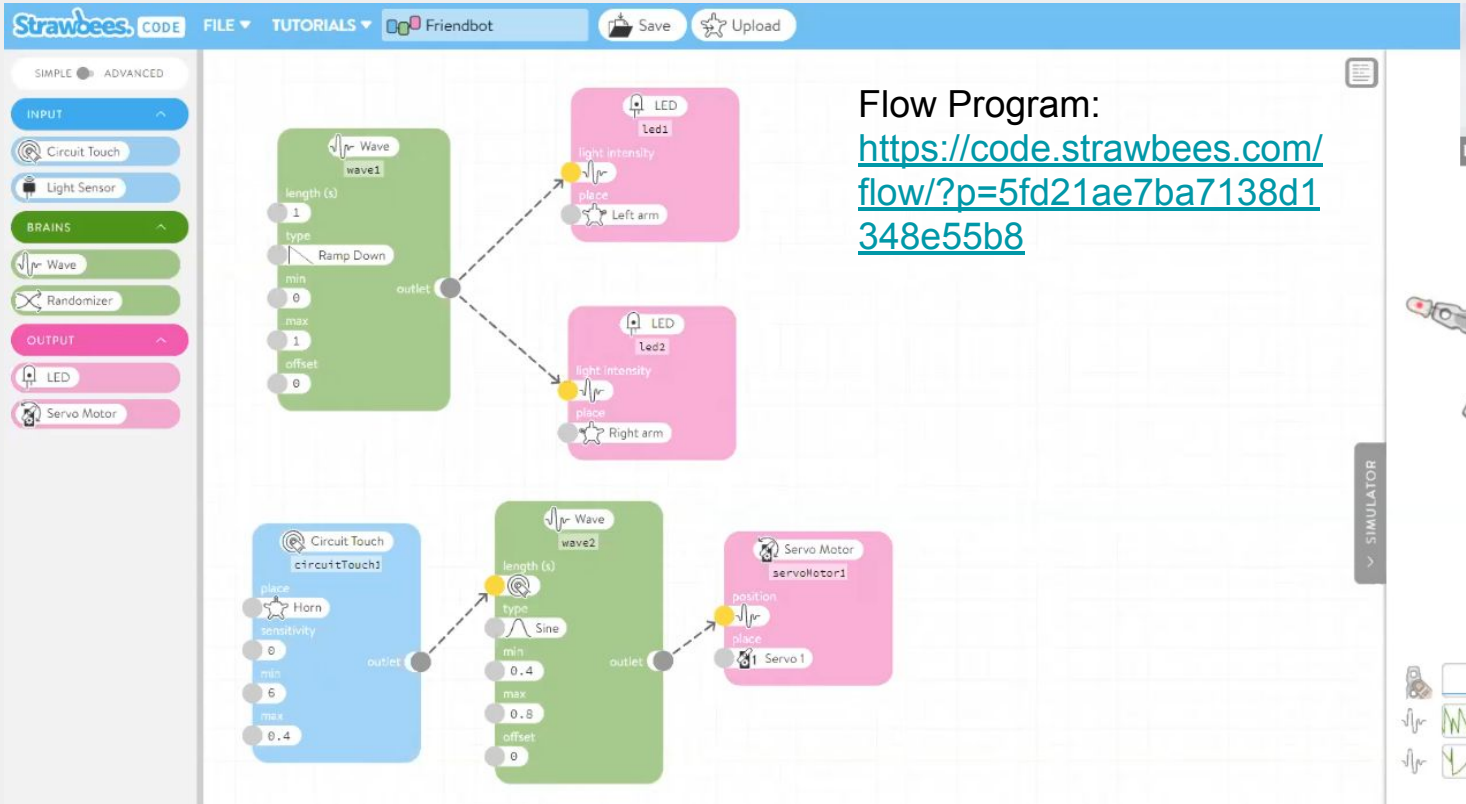
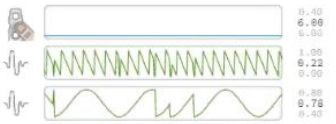


MIN & MAX PARAMETERS

Many nodes have **minimum** and **maximum** number parameters that control the **smallest** and **largest** values sent by the outlet.

Pair Programming with the Friendbot

Lindsay and Paulo teamed up to program the Friendbot using the Wave node to mimic a heart beating using Ramp Down. Then using the circuit touch to trigger the head of the Friendbot to show excitement. Otherwise the friendbot is calm in motion by default when nothing is touched.



Flow Program: https://code.strawbees.com/flow/?p=5fd21ae7ba7138d1348e55b8