Venue

University of Luxembourg Incubator,
6A, Avenue des Hauts-Fourneaux,
4362 Esch-sur-Alzette, Luxembourg
Near Belval Plaza (Rockhal)

Age 8 up to 14 years

5 Saturdays : 13.00 to 16.00 hours

07 May to 18 June 2022

LEARNING BY
DOING
=
LEARNING BY
PLAYING

PAT Lux

Learning is fun

Car is a perfect multi-disciplinary invention that is more fascinated by children especially at younger age. **Building a car** involves **Physics** (for example linear and angular motions, force, work, energy, friction, magnetism and so on), **Chemistry** (fuel cells, chemical reaction of fuel with oxygen during combustion process, battery and so on), electrical, electronics, and what not it consists of 100s of computers – **Programming**. Today we are in an era that the cars are autonomously driven and consists of numerous machine learning algorithms.

You build and You Learn

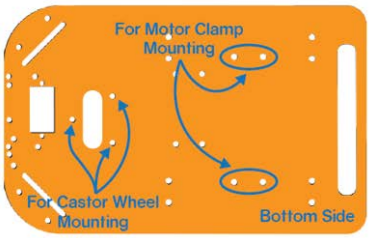
What you build / do

1. Creativity to understand how to make a **Car ?** – build your own Rolls-Royce
2. What makes **Car** to move (Force, work, energy concepts) **?**
3. Why is the chemistry between physics and the programming in a **Car ?**
4. What can drive a **Car** (wind energy, solar energy, electric energy etc.) **?**
5. How can you program and control your **Car ?** and many more questions to be demystified

Wheel

DC Motor

Motor Bracket



Base Plate

Bolt

Nut

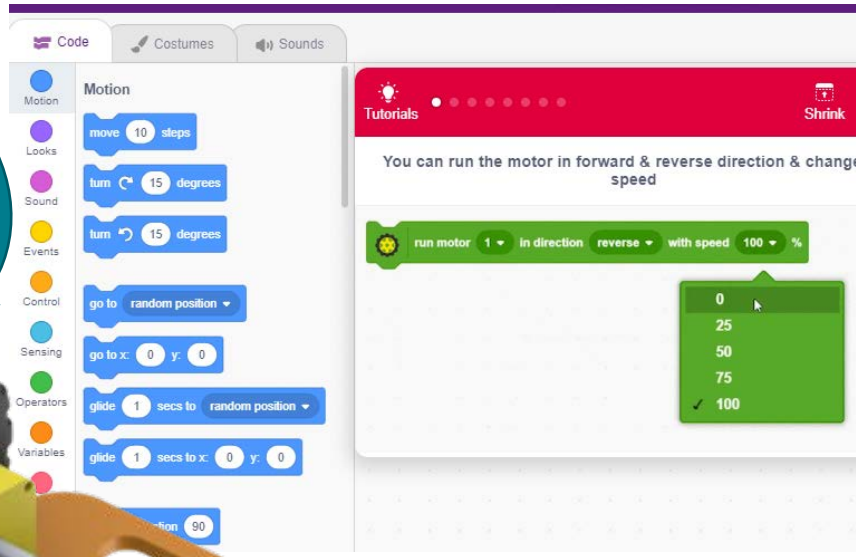
Screwdriver

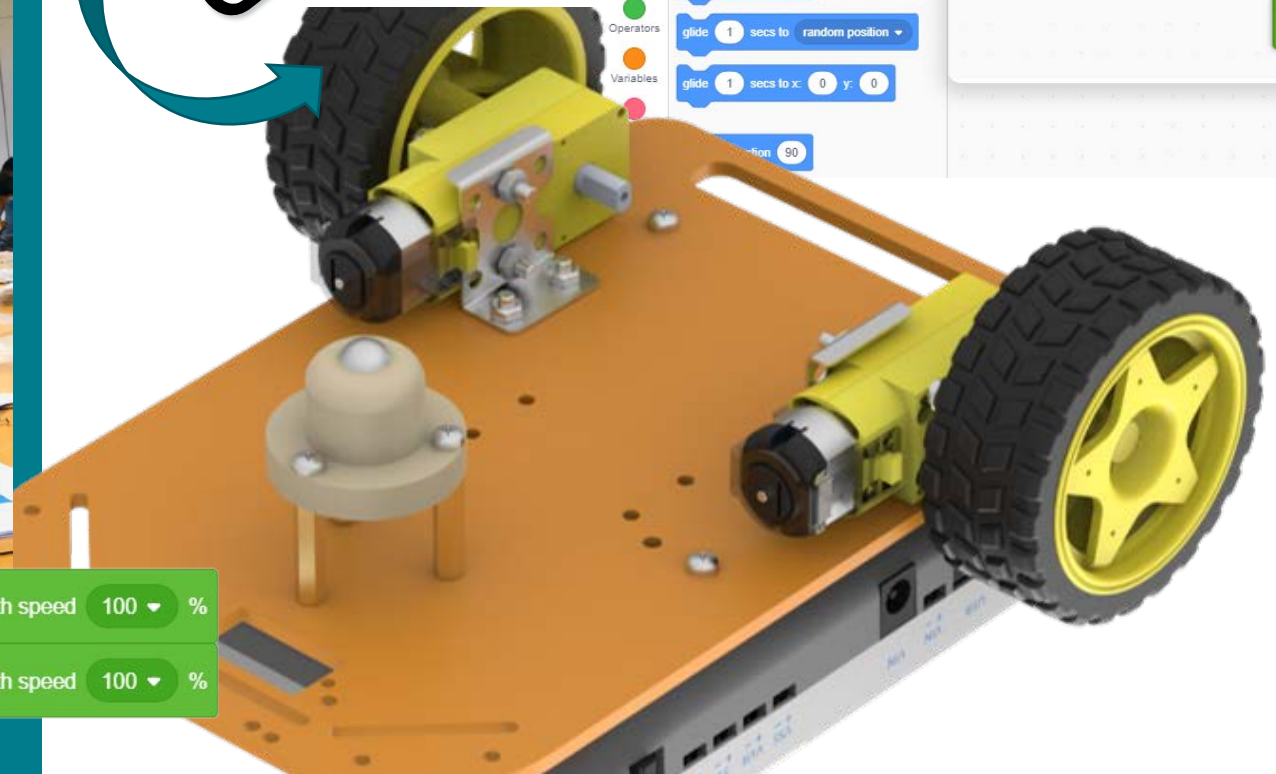
Approach

Children and the parents would use DYI components to build **Cars.** The materials required to build will be provided during the workshop. How to build "something" itself a "creativity" task, and while building, the child will have "n" number of scientific questions which could be explored and answered.

Science Behind the Wheels

doing





Schedule

Both Uni Lux Incubator and Science Center accommodate 50 people, we follow necessary COVID 19 protocol

The fee 80 Euros to be paid to LU58 0030 0321 9626 0000 Parents as Trainers Luxembourg

S No	Session	Learning objectives	Batch 1	Venue	Days
1	Lets build simple cars	Building a first Car using ballon, cardboard, plastic bottle caps, legos, rubber band and etc.	7-May	Uni Incubator Belval	
2	Building energy sources electrical, chemical, solar into motions	Building the second car 1. What else can drive a vehicle (Wind energy, solar energy etc.) 2. How can we produce Solar energy (Solar panel - how it works) 3. How do I convert Solar energy to motion? 4. DC motor applications	7-May	Uni Incubator Belval	Day 1
3	Lets build Programmable cars	Autonomous robot, which uses IR sensors to follow the object in front of the robot.	14-May	Uni Incubator Belval	
4	Building 3rd Car : Autonomous robot	1. Assembly of the Robot 2. Connecting the wires 3. Programming - logical control 4. Testing the robot	14-May	Uni Incubator Belval	Day 2
5	Let your smartphone controlls your car	Smartphone-controlled robot, the motion of the robot is controlled using the inputs of a smartphone app. We will use the gamepad module to control the car	4-Jun	Uni Incubator Belval	
6	Building 4th Car : Smart car	1. Assembly of the car 2. Connecting the wires 3. Programming - logical control 4. Testing the car	4-Jun	Uni Incubator Belval	Day 3
7	Lets build "line" assisted car - a self driving car	The car autonomously follows a black line on a white floor. Detection of line in this self-driving car is done using sensors.	11-Jun	Uni Incubator Belval	Day 4
8	Building 5th Car : Self-driving car	1. Assembly of the car 2. Connecting the wires 3. Programming - logical control 4. Testing the car	11-Jun	Uni Incubator Belval	
9	Projects and presentations	Building 6th car of your interest	18-Jun	Uni Incubator Belval	Day 5