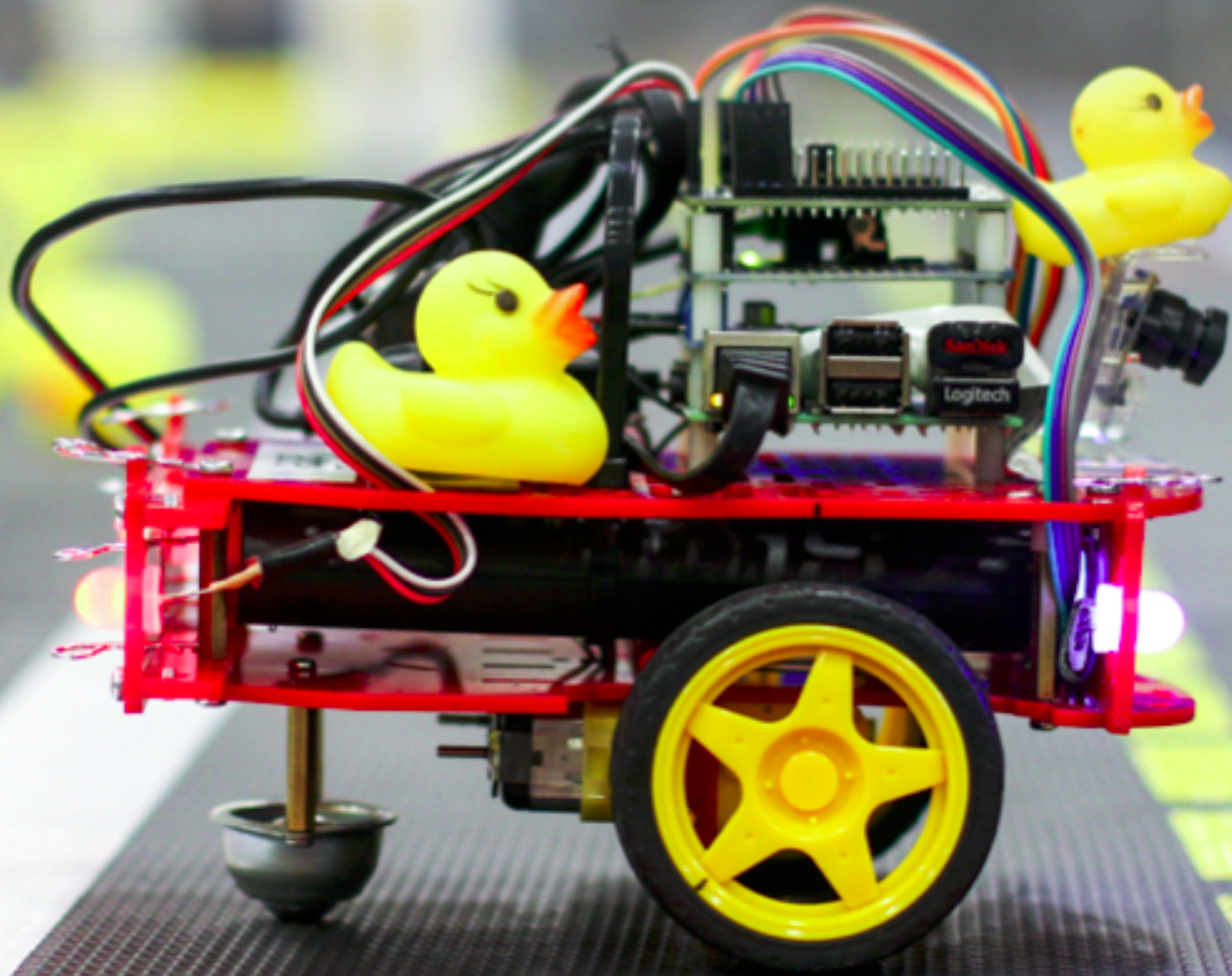MISE Foundation Summer School
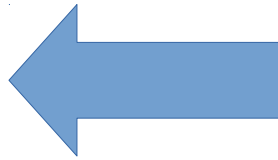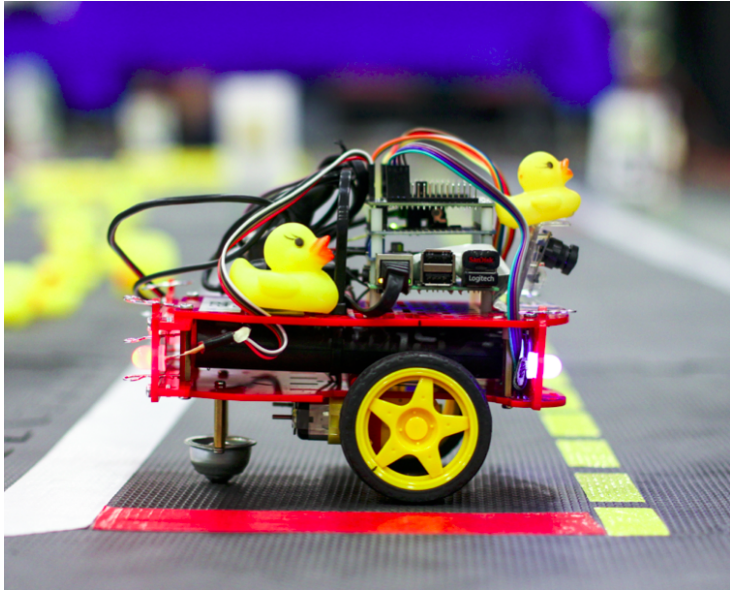Robotics

Welcome!

My name: Vincent Mai

I am from: Canada

I am a PhD student in Robotics at Université de Montréal.

And you, who are you?
Tell me about you.

This is a DuckieBot.
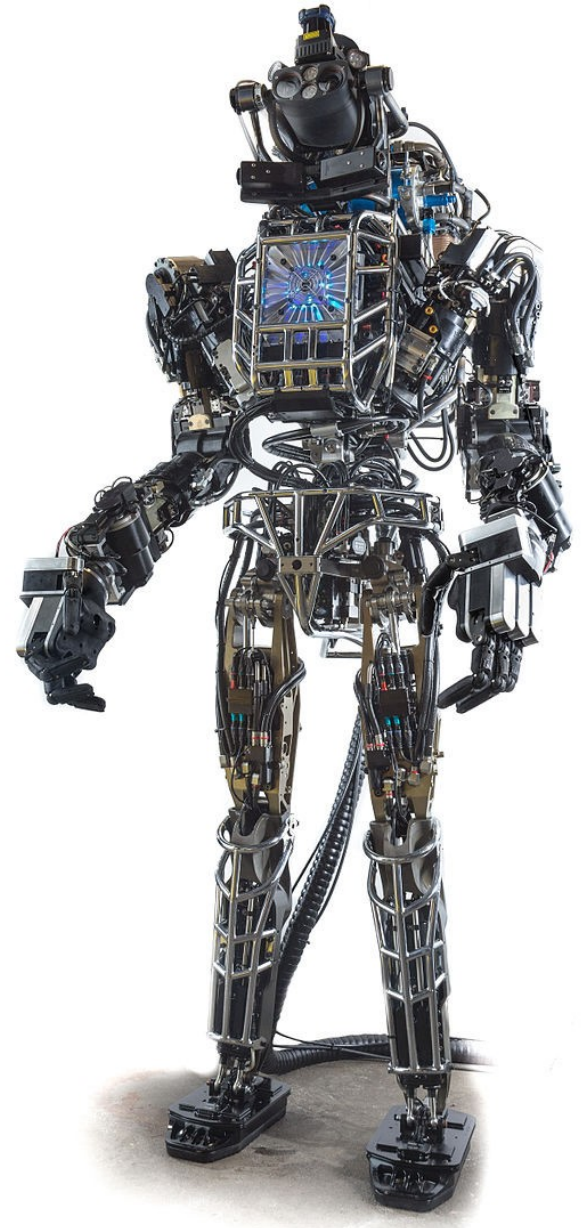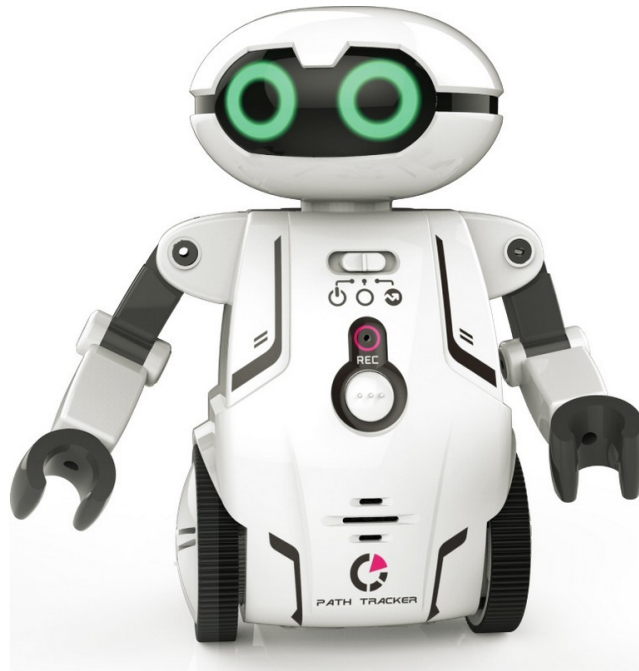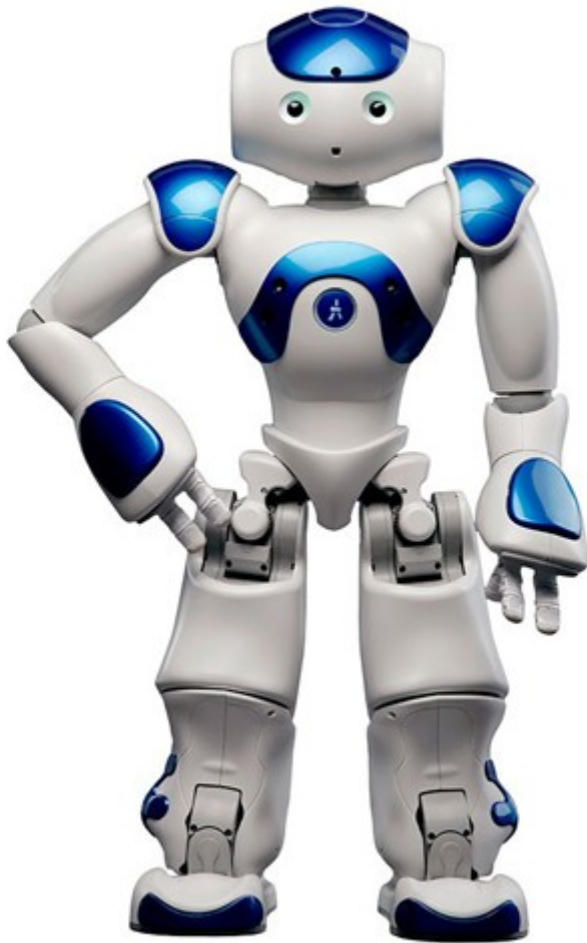I have one here. Its name is Moose.

Question: according to you, what is Moose?
    A. a toy
    B. a miniature car
    C. a robot

Answer: all of them!

What is a robot?

According to Google Images...

But also...

What is a robot?

"A machine capable of carrying out a complex series of actions automatically, especially one programmable by a computer."

- Oxford dictionary

How does a robot work?

1) Sensors
Get information from the environment.

2) Processor
Understand this information and take decisions

3) Actuators
Act the decisions upon the real world

Your turn!

Which sensors and actuators can you find on this drone?

Robotic hand: actuator or sensor?

Your turn!

Name all the existing sensors you can think of!

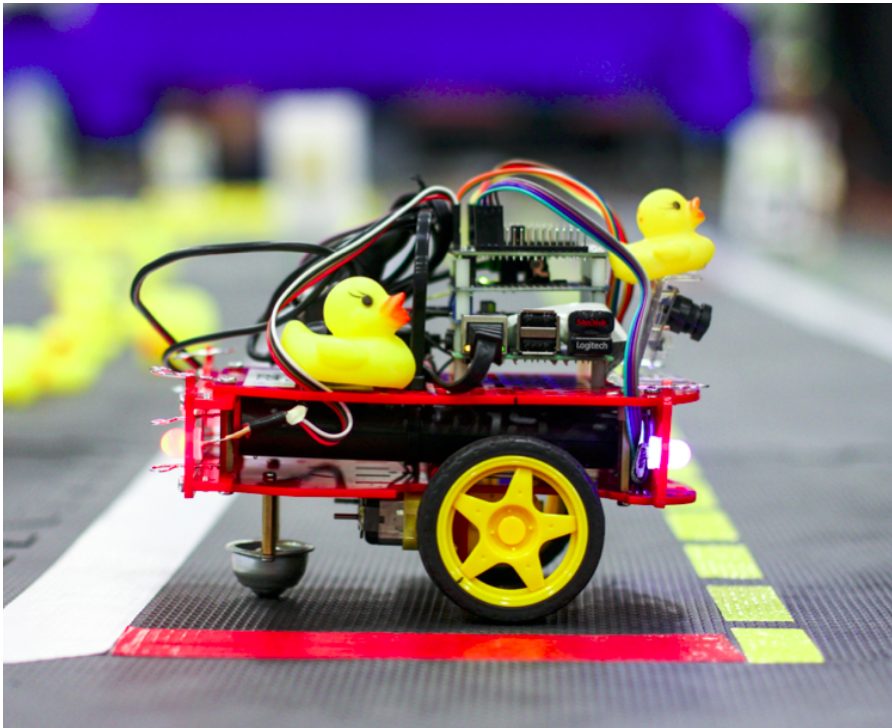|		
Button, joystick	GPS	Thermometer
Camera	Accelerometer	Pressure sensor
Infrared sensor	Gyroscope	Barometer
Light sensor	Ultrasound	Voltmeter
Lidar	Radio	Pedometer
Sonar	Magnetometer	Wheel encoder

...

Back to the DuckieBot

Sensors?

    1 camera

Actuators?

    2 wheel motors

Processor?

    1 Raspberry Pi

What will we do during two weeks?

Objective: lane following for Moose

1) Maths & physics prerequisites

2) Computer science for robotics

3) 1st application: drive Moose with a joystick

4) 2nd application: lane following for Moose