What Will You Learn?

Course Sequence

Course 1

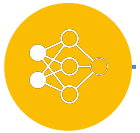
Fundamentals *of TinyML*

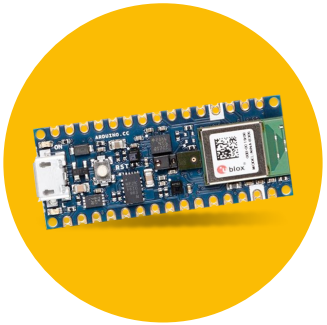
Course 2

Applications *of TinyML*

Course 3

Deploying *TinyML*





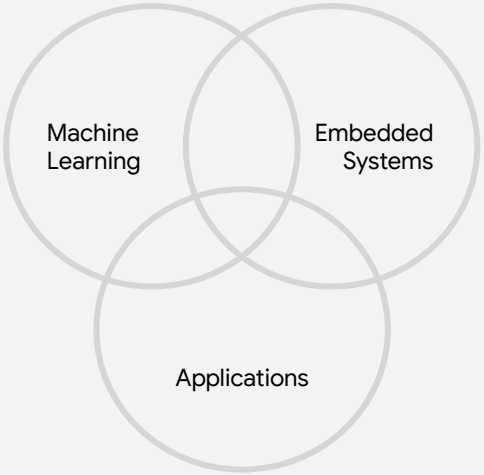
Fundamentals

Learning

We will learn the fundamentals of each of these, just enough to focus on the ultimate goal of being able to build TinyML applications.

Interactions

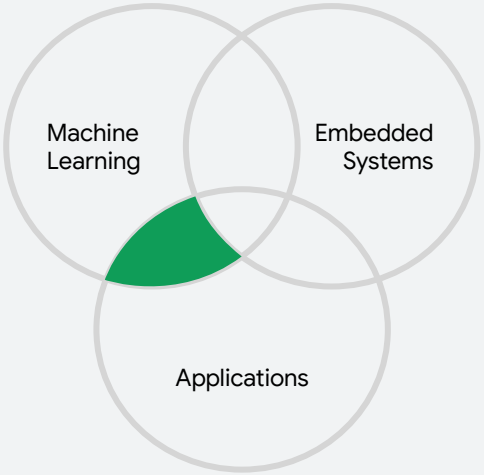
In addition, we will bring these diverse topics together to reveal the interesting learnings at the various **intersections**



Interactions

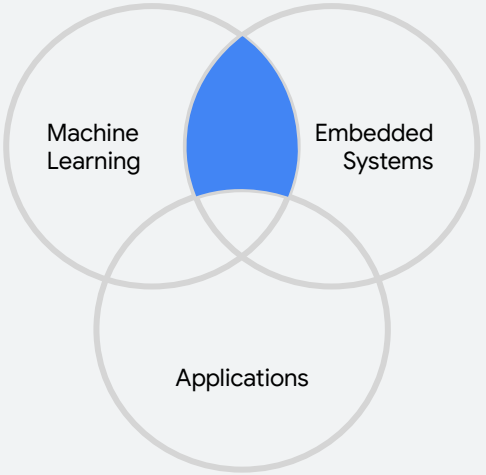
How **machine learning** can enable new and interesting **TinyML applications**?

Source: https://wildlabs.net/resources/competition/challenge-elephantedge



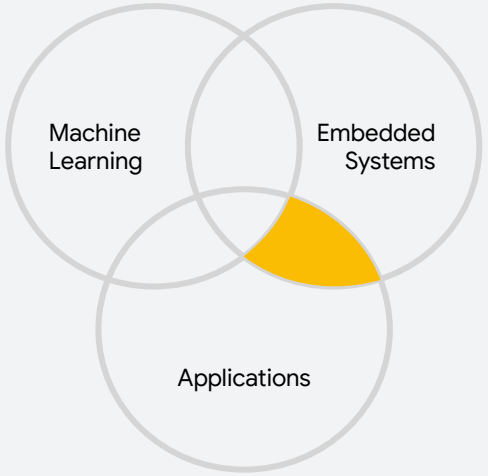
Interactions

What are the **challenges** with enabling **machine learning** on **tiny**, resource-constrained **embedded devices**?



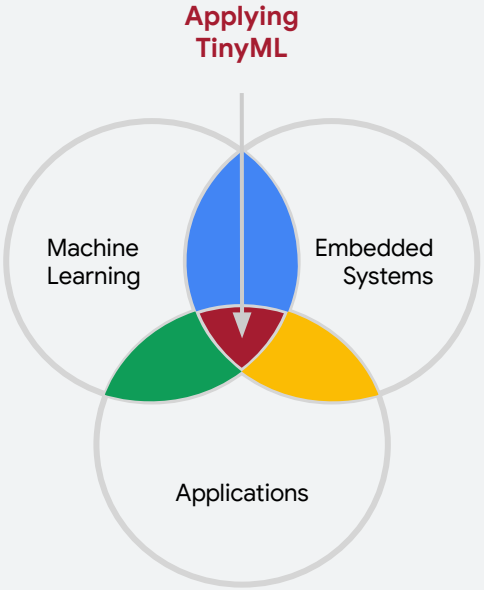
Interactions

What type of new **use cases** can we possibly enable on **embedded systems** that we could not otherwise do before?



At the End of the Day

Given your understanding of things at these various intersections, you will have a deep understanding for **how to apply TinyML**



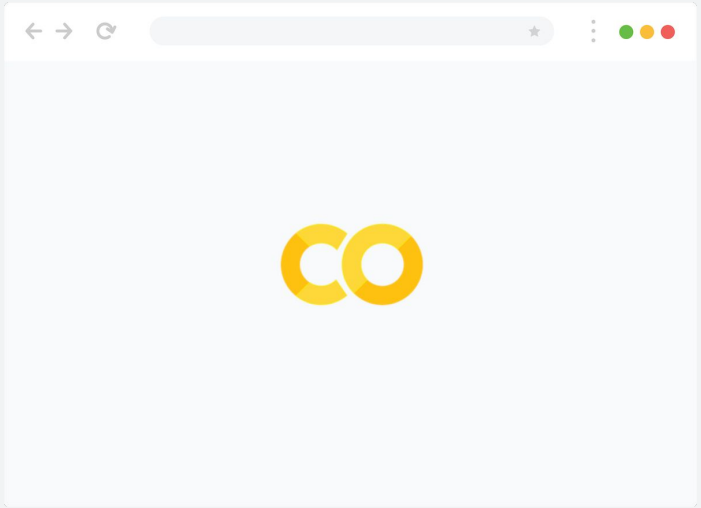
How am I Going to Get There?

Hands-on Learning

- Software
  - Machine learning (**TensorFlow**)

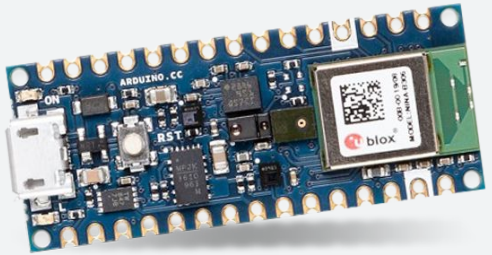
Hands-on Learning

- Software
  - Machine learning (TensorFlow)
  - Programming environments (Google **Colab**)



Hands-on Learning

- Software
  - Machine learning (TensorFlow)
  - Programming environments (Google Colab)
- Hardware (Course 3)
  - **Arduino** 33 BLE Sense

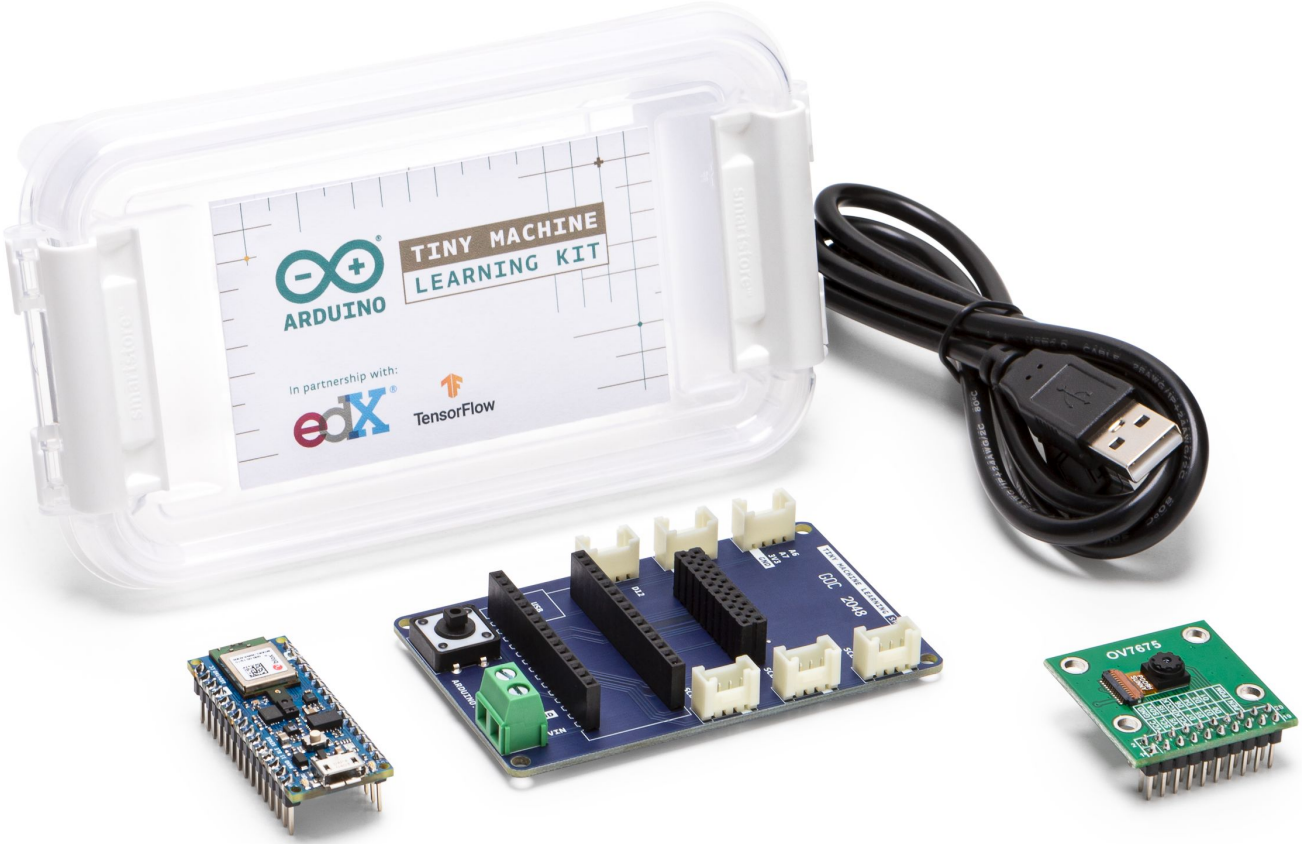


Hands-on Learning

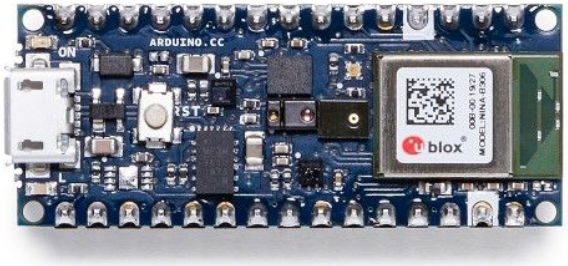
- Software
  - Machine learning (TensorFlow)
  - Programming environments (Google Colab)
- Hardware (Course 3)
  - Arduino 33 BLE Sense
  - **Sensors**

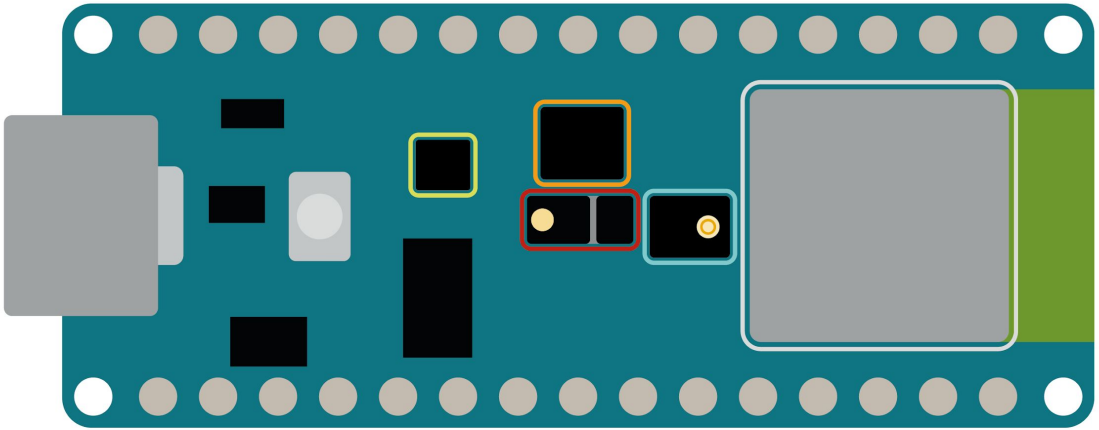
Course 3 (Only)

Since you will be deploying **TinyML** on a real embedded system and microcontroller, you will need to have a **TinyML** course kit.


ARDUINO
TINY MACHINE
LEARNING KIT
In partnership with:
edX
TensorFlow
OV7675

NANO 33 BLE SENSE





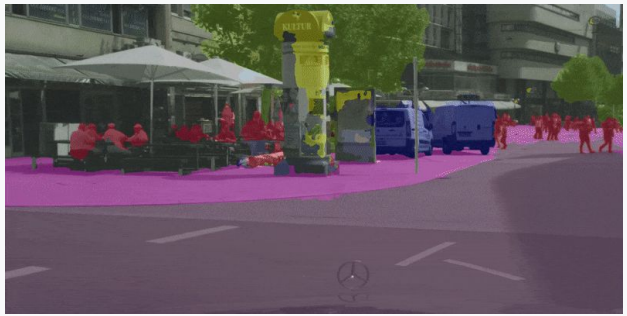
- Color, brightness, proximity and gesture sensor
- Digital microphone
- Motion, vibration and orientation sensor
- Temperature, humidity and pressure sensor
- Arm Cortex-M4 microcontroller and BLE module

Hands-on Activity (Course 1 & 2—Colab)

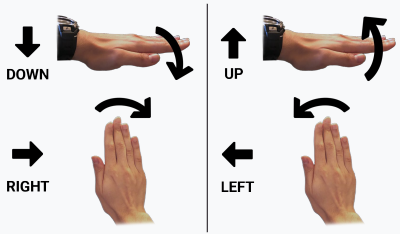
Speech

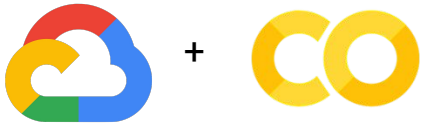
Okay, Google.

Vision



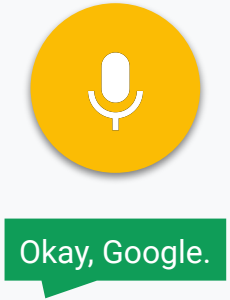
IMU



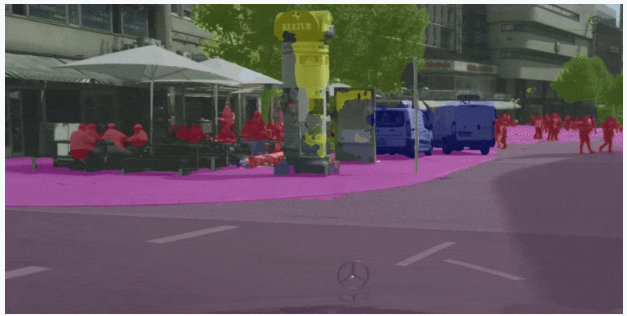


Hands-on Activity (Course 3—On-Device)

Speech



Vision



IMU