

Why We Are Excited About TinyML

Course Sequence

Course 1

Fundamentals of TinyML



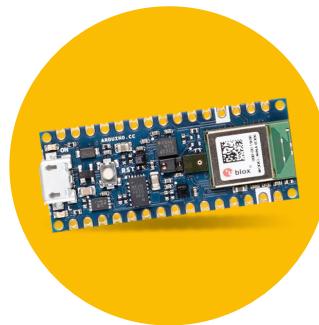
Course 2

Applications of TinyML



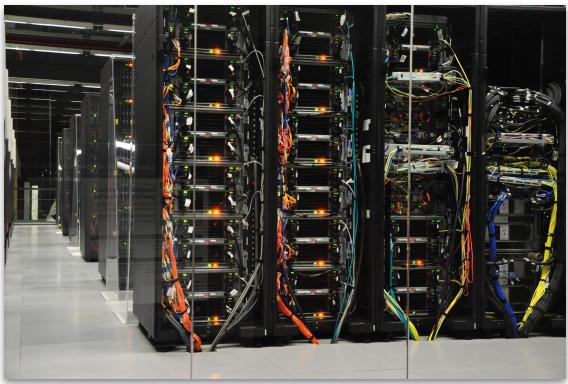
Course 3

Deploying TinyML



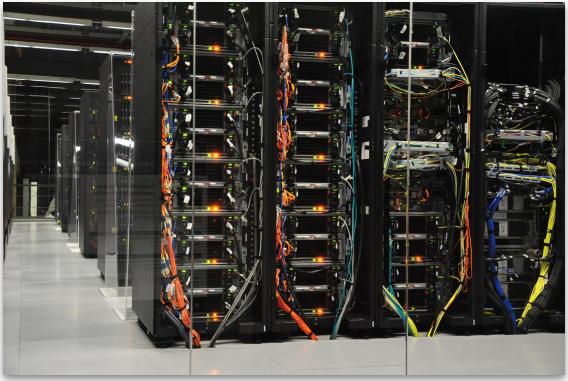
An introduction to Machine Learning (ML) with TensorFlow using the Colab programming environment. You will gain an understanding of how to design, develop, and use ML applications through the lens of Tiny Machine Learning.

Takeaways



Google Assistant





High power
High bandwidth
High latency



Google Assistant



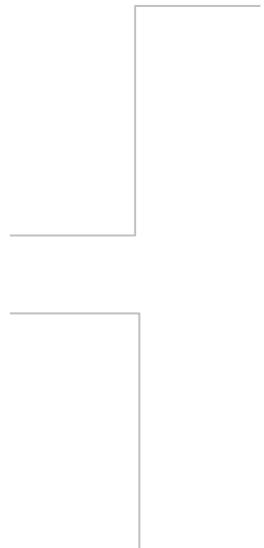
Low power
Low bandwidth
Low latency



Endpoint Devices



Google Assistant



Endpoints Have Sensors, Tons of Sensors

Motion Sensors

Gyroscope, radar,
magnetometer, accelerator

Acoustic Sensors

Ultrasonic, Microphones,
Geophones, Vibrometers

Environmental Sensors

Temperature, Humidity,
Pressure, IR, etc.

Touchscreen Sensors

Capacitive, IR

Image Sensors

Thermal, Image

Biometric Sensors

Fingerprint, Heart rate, etc.

Force Sensors

Pressure, Strain

Rotation Sensors

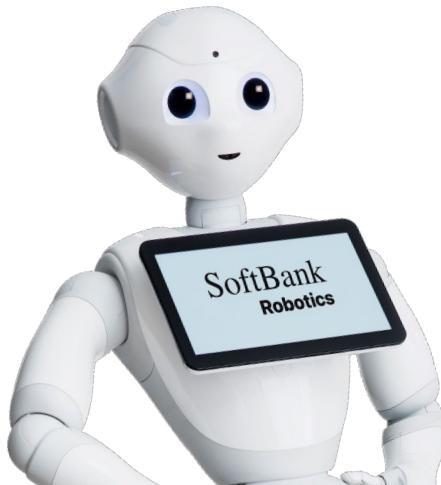
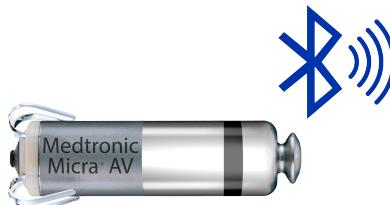
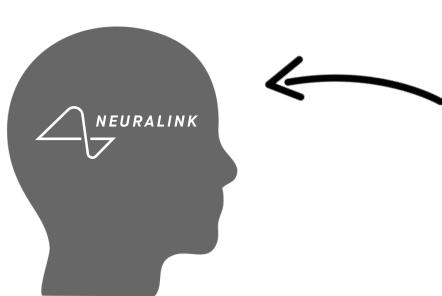
Encoders

No Good Data Left Behind

5 Quintillion
bytes of data produced
every day by IoT

<1%
of unstructured data is
analyzed or used at all

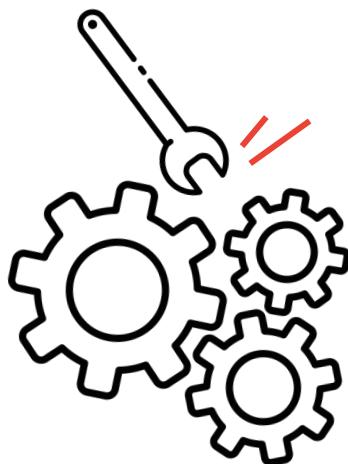
More Forward Looking Applications





AI Everywhere

- AI offers **great benefits**, but at the same time it introduces **new risks** and **ethical challenges**



- New technologies are **disruptive**, not **neutral**.
Artificial intelligence can...
 - **Change** current practices
 - **Influence** human decisions
 - **Regulate** human behavior

AI Everywhere

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Industry

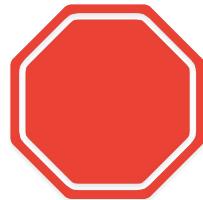


Environment



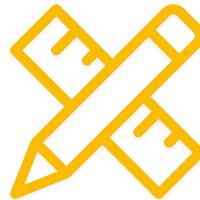
Humans

Non-Intended Use—What should we do?



STOP

Stop developing the technology altogether



CHANGE

Implement design choices to prevent or mitigate non-intended use



REPURPOSE

Embrace non-intended use and redesign for new purpose

Companies can **do well** by ***doing good!***



DeepMind

facebook

Google

Microsoft



PARTNERSHIP ON AI