

Starting soon!

Intro to AI

CS Club 22/23
Tony Lin



The background is a solid blue color. Overlaid on this are several wavy, horizontal lines that resemble a sine wave. These lines are composed of many small, dark blue dots. The dots are arranged in a way that creates a sense of depth and movement, with some lines appearing closer and more densely packed than others. The overall effect is a modern, digital aesthetic.

What is AI?

AI:

- Artificial Intelligence
 - Ability to make decisions based on inputs
 - Can be simple if statements
 - Ex. Game AI
 - Generally refers to machine learning
 - Much more complicated to make
 - Ex. ChatGPT

Machine Learning

- Subset of AI that is made via “training”
 - Given a set of inputs, and outputs
 - Never given instructions to get output
 - Tries to figure out the instructions to get the output
 - Generally involves very complex math
 - Outputs a model that can be used on new data

Machine Learning Cont.

- Training generally follows the same pattern
 - Rank
 - Cull (choose the best)
 - Modify



Teachable Machine

The background of the slide is a solid blue color. Overlaid on this background are several wavy, horizontal lines composed of small, dark blue dots. These lines create a sense of motion and depth, with some lines appearing more prominent than others, giving the impression of a 3D effect or a stylized representation of data flow.

What is it?

- Made to be able to train models easily
- A free website, from Google
 - Simple to use, and can be exported to a multitude of different platforms
- <https://teachablemachine.withgoogle.com/>

Trying it:

- Rock, Paper, Scissors
 - Give it images (inputs)
 - Give it labels (outputs)
 - Test with a new, unseen, image
- Can use online images, or webcam

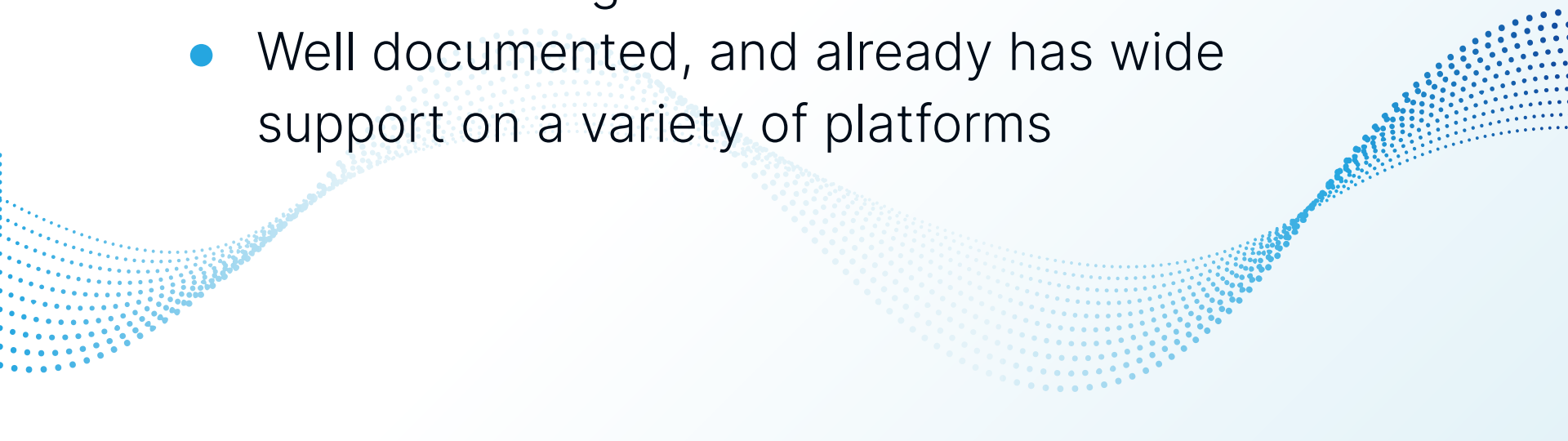
Exporting to Code

- Variety of options
 - All are types of TensorFlow
 - Each serve a different purpose
 - TensorFlow.js (Web)
 - TensorFlow (Desktop)
 - TensorFlow Lite (Mobile / Embedded)

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TensorFlow?

TensorFlow

- Made by Google, framework for working with AI & ML
 - Makes working with ML much easier
 - Well documented, and already has wide support on a variety of platforms
- 
- A decorative graphic consisting of a series of blue dots arranged in a wavy, horizontal pattern that spans the bottom half of the slide. The dots are more densely packed in some areas, creating a sense of motion or a stylized wave.

Installation

- Google Colab
 - <https://colab.research.google.com/>
- Locally
 - CPU and GPU version
 - GPU version installation is complicated, and so we will use CPU
 - `pip install TensorFlow`

Demo

- Export our trained model to our installed location
- Try it out with an image
 - Use your webcam or a picture online, depending on how you trained it

Training Using TensorFlow

- Currently, we are using a pretrained model
- We can create our own using TensorFlow
 - Handwritten digits recognition
 - Like the “hello world” of ML
 - Use a built in dataset, and test it on an image