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Teachable Machine From Google Makes It Easy To Train And Deploy ML Models

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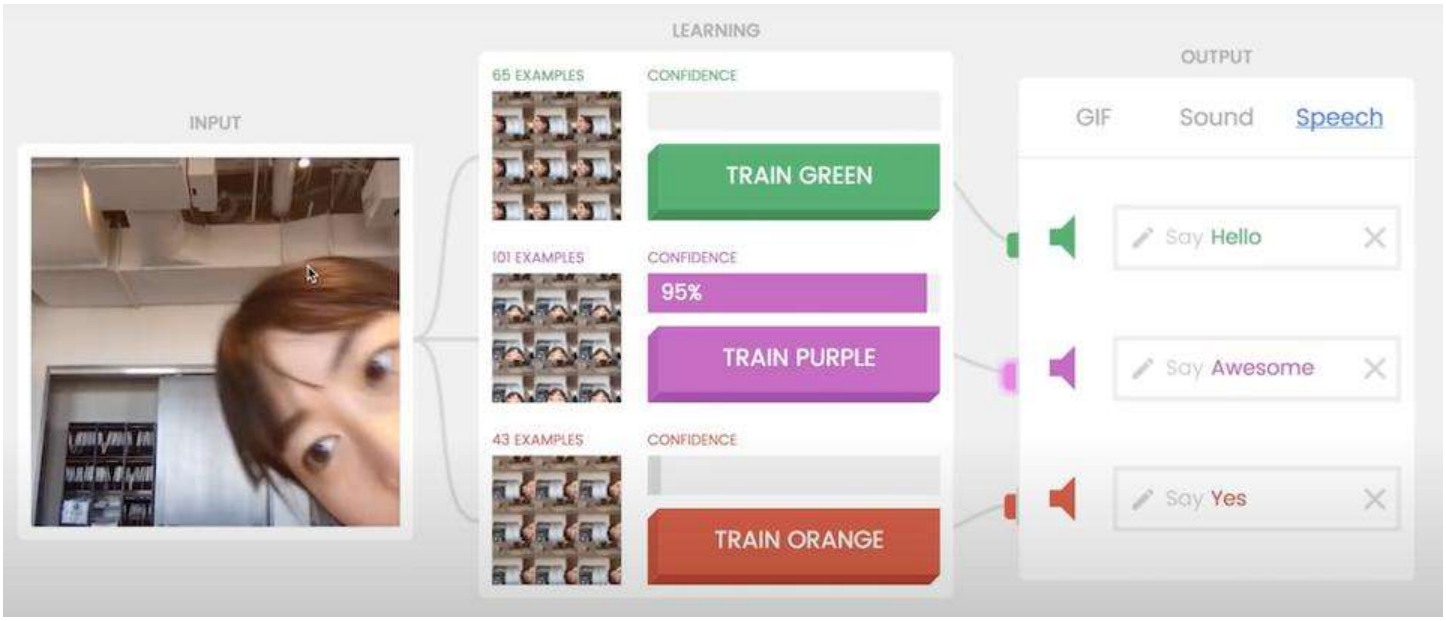
Teachable Machine is an experiment from Google to bring a no-code and low-code approach to training AI models. Anyone with a modern browser and webcam can quickly train a model with no prior knowledge or experience with AI.



Teachable Machine - GOOGLE

Teachable Machine is not exactly new. It was initially launched in 2017 and got revamped in 2019 with additional capabilities, including saving the model to Google Drive and exporting it to other applications.

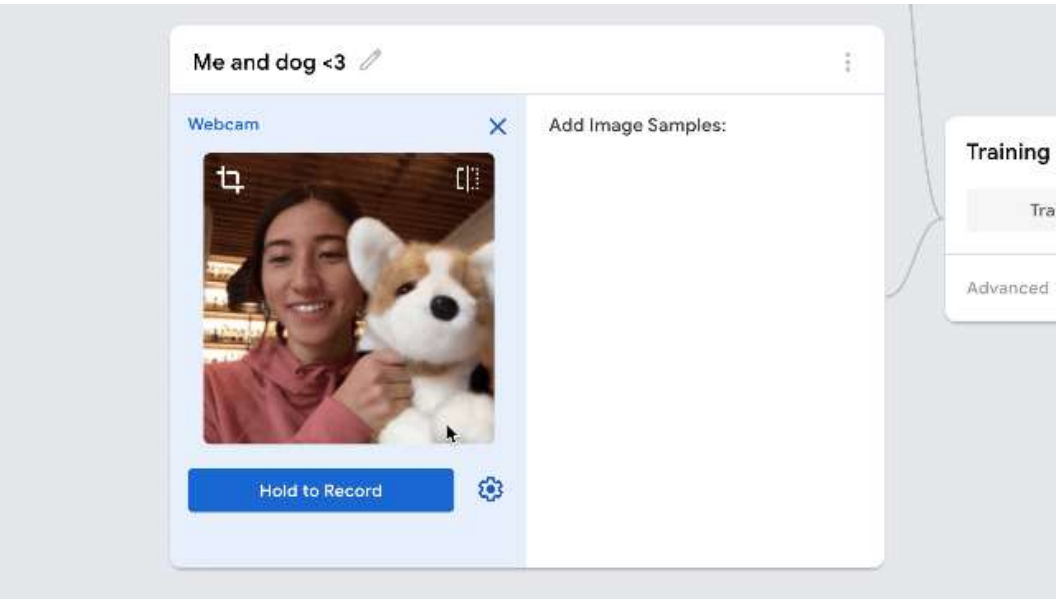
The community behind the project is continuously making it better. It has become so popular that education researcher Blakeley H. Payne and her teammates have been using Teachable Machine as part of an open-source curriculum that teaches middle-schoolers about AI through a hands-on learning experience. Steve Saling of ALS Residence Initiative is using Teachable Machine for improving communication for people with impaired speech.

The magic behind Teachable Machine is based on a popular deep learning technique called transfer learning. Most of the neural network architecture of a fully trained model is retained while replacing a minor part of it based on the data. This approach not only requires less compute power but also requires a smaller dataset for training. Google is leveraging some of the best deep learning and neural network models for Teachable Machine.

Teachable Machine supports models based on images, sounds, and poses. You can use the webcam to capture images or uploading existing image files from your machine. The browser simply relies on your machine's inbuilt microphone to capture 10 seconds of audio samples for sound. You can train models that can detect your hand movements and body poses - all from the webcam.

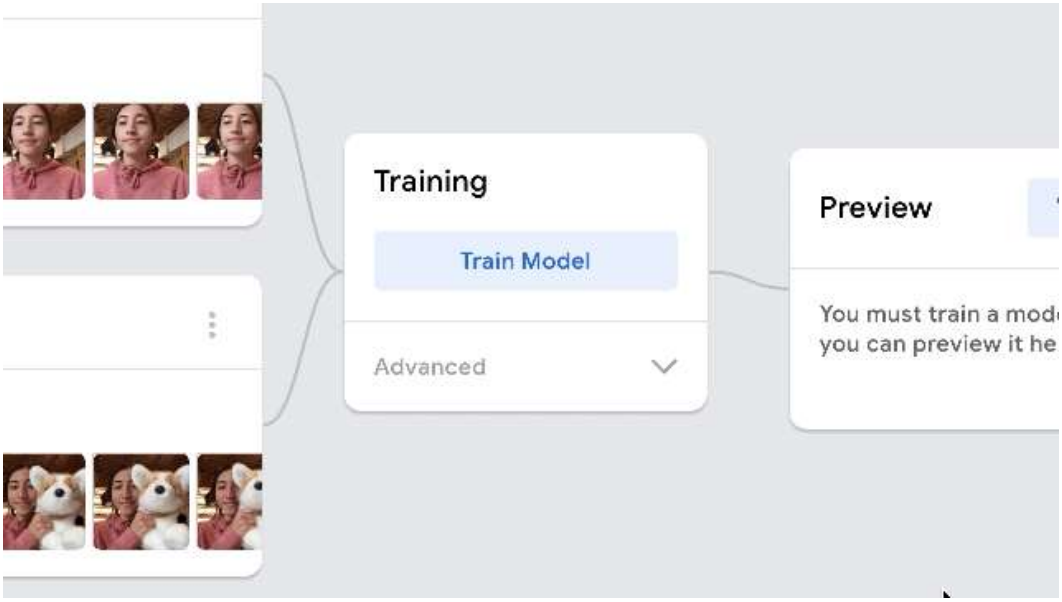
There are three steps involved in training a model with Teachable Machine at a high level - gathering the samples, training the model, testing, and improving the model.

Gathering the sample feeds the algorithm with enough data for the training.



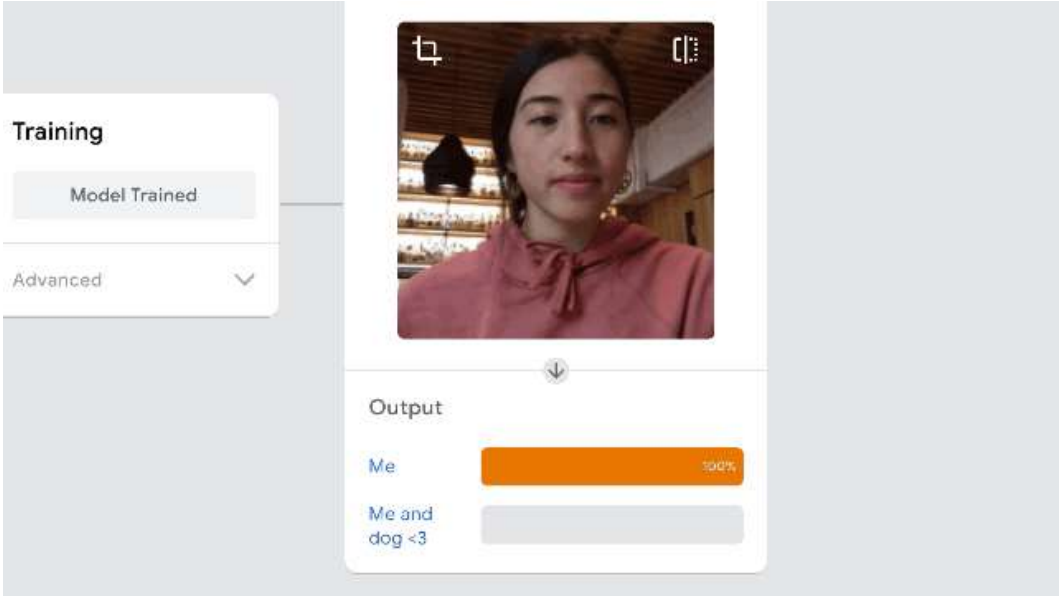
Gathering Data - GOOGLE

Training takes place within the browser. The data stays in your machine without being moved to the cloud.



Training the model – GOOGLE

Finally, you can tweak the model to improve its accuracy. You can additional samples and retrain to increase prediction accuracy.



Test the model - GOOGLE

The best part of Teachable Machine is the ability to export the model to various environments and applications. You can easily export the model as a TensorFlow.js model and host it on Teachable Machine for free so that you can use it with any website or mobile app. It is also possible to convert it to TensorFlow and TensorFlow Lite and download it for local use. The model can even be converted to a format that runs on Google's Coral Development Kit powered by the Edge TPU.

It would be nice if there is option to export the code to a Google Colab Notebook to tweak the code, enabling power users and developers to extend it further.

Platform vendors with investments in AI are in a race to democratize machine learning and deep learning. Teachable Machine is an alternative to Lobe from Microsoft, which offers a similar approach to training models.