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Analysis on Trends of No-Code Machine Learning Tools

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Abstract

The amount of digital text data is growing exponentially, and many machine learning solutions are being used to monitor and manage this data. Artificial intelligence and machine learning are used in many areas of our daily lives, but the underlying processes and concepts are not easy for most people to understand. At a time when many experts are needed to run a machine learning solution, no-code machine learning tools are a good solution. No-code machine learning tools is a platform that enables machine learning functions to be performed without engineers or developers. The latest No-Code machine learning tools run in your browser, so you don't need to install any additional software, and the simple GUI interface makes them easy to use. Using these platforms can save you a lot of money and time because there is less skill and less code to write. No-Code machine learning tools make it easy to understand artificial intelligence and machine learning. In this paper, we examine No-Code machine learning tools and compare their features.

Keywords: Machine Learning, No-Code, Low-Code, Machine Learning Tool

1. INTRODUCTION

The amount of digital data is growing exponentially, and many machine learning solutions are being used to monitor and manage this data. Artificial intelligence and machine learning are used in many areas of our daily life, but the underlying processes and concepts are not easy to understand for most people. At a time when the AI service market is growing rapidly and many experts are needed, No-Code machine learning tools are a good solution [1].

Originating from machine learning education tools, No-Code machine learning tools make it easy to understand artificial intelligence and machine learning [2, 3]. No-Code machine learning is an emerging field that is growing in maturity and flexibility with each passing day [4-7].

No-code machine learning tools is a platform that enables machine learning functions to be performed without engineers or developers. These platforms do not require complex coding and allow you to create your own tools using a drag-and-drop interface. Using such a platform can save you a lot of money and time because it requires less technical skills and less code to write. Business analysts without software coding and programming skills need no-code, low-code applications to solve their analytical problems. Machine learning engineers can also leverage and benefit from low-code applications to develop machine learning solutions [8].

This paper examines Teachable Machines and stackML among no-code machine learning tools, and compares and analyzes them.

2. NO-CODE MACHINE LEARNING TOOL

2.1 Teachable Machine

Teachable Machine provides a fast and easy way to create machine learning models without the use of expertise or coding. The Teachable Machine can train a computer to recognize images, sounds, poses, and more [9].

Figure 1 shows project types of Teachable Machine. Image and Pose projects use images as data sources, and Audio projects use sounds as data sources.
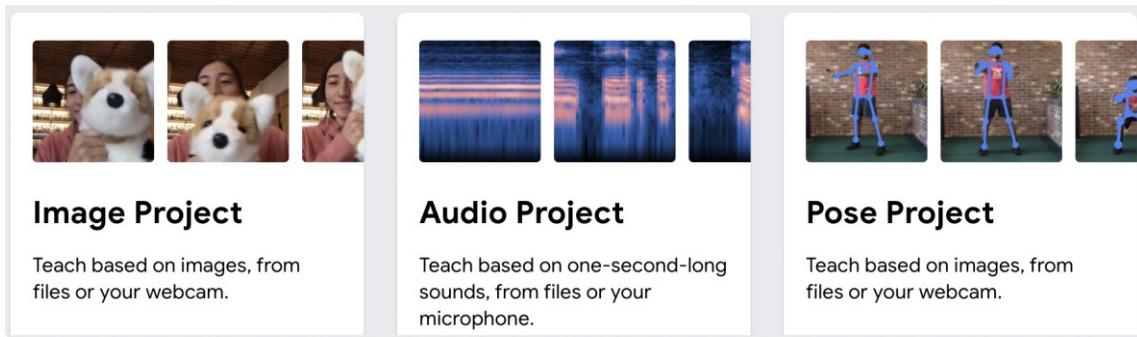

Figure 1. Project types of Teachable Machine

Figure 2 shows the training process of the Teachable Machine in the form of a visual diagram. After collecting data for each class using a webcam or file format, a machine learning model can be trained. After completing the training, you can get results for new data in the preview using the generated machine learning model.
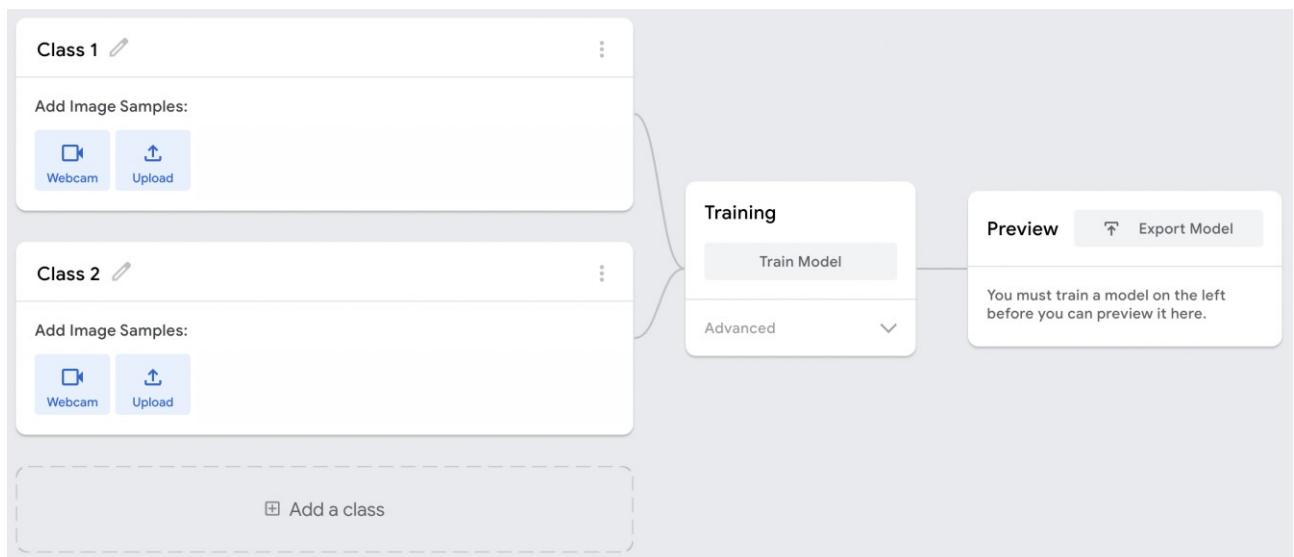

Figure 2. Training process of Teachable Machine

Figure 3 shows the training options for Teachable Machines. Training options are epochs, batch size, and learning rate. One epoch means that each and every sample in the training dataset has been fed throught the training model at least once. A batch is a set if samples used in one iteration of training. The learning rate is a tuning parameter of the optimizer that determines the step size at each iteration as it moves towards the minimum of the loss function.
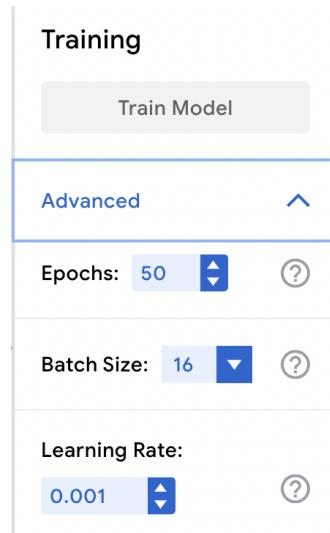
Figure 3. Training options of Teachable Machine

Figure 4 shows the export model options of Teachable Machine. Teachable Machine shows that the created model can be exported in three types: Tensorflow.js, Tensorflow, and Tensorflow Lite. Tensorflow.js is used in web pages, and Tensorflow is used as application. Tensorflow Lite can be used in smartphone apps.
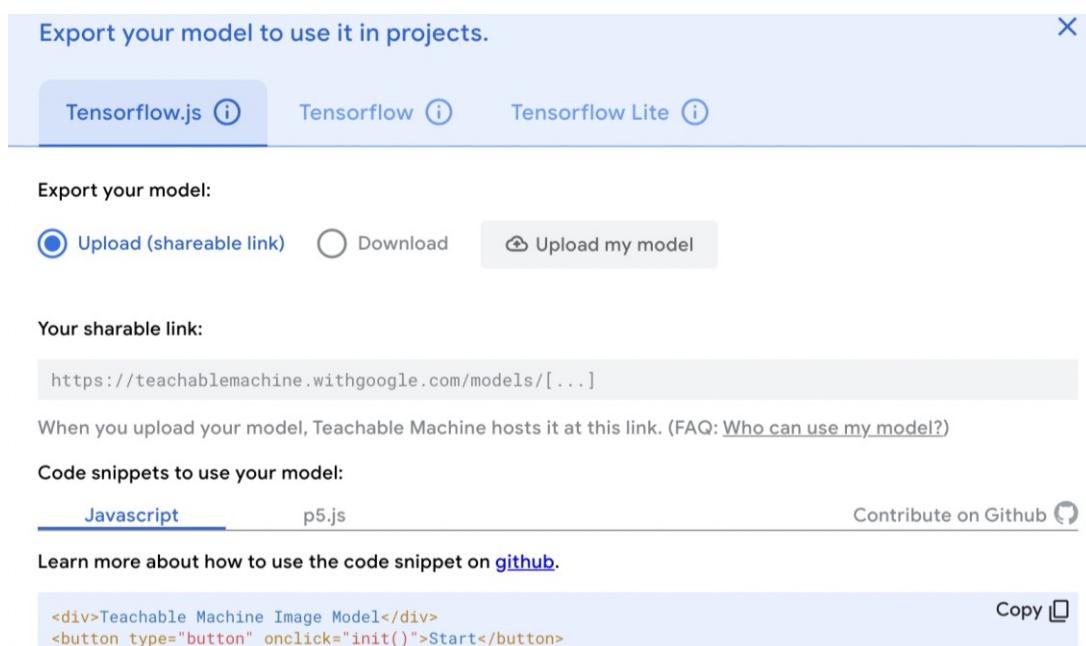
Figure 4. Export model options of Teachable Machine

2.2 StackML

StackML is a simple GUI tool for non-AI people to use machine learning in browser. StackML provides a StackML Javascript library that allows you to use machine learning models in web apps. It provides pre-trained models and allows you to train models on your own datasets [10].

Figure 5 shows the main page of stackML. If you press the Go to dashboard button, a screen for selecting pre-trained models and models to be trained with your own data appears.

Figure 5. Main page of stackML

Figure 6. Pre-trained models page of stackML

Figure 6 shows the pre-trained models provided by stackML. The pre-trained models are Image Classification, PoseNet, BodyPix, Face Detection, Face Landmark Detection, Face Expression Detection, and YOLO.

Image Classification build an image classification model with n number of classes. PoseNet create classification model for text snippets. BodyPix develop a model to transfer style from one image into another. Face Detection develop a model to detect a face. Face Landmark Detection develop a model to detect a face landmark. Face Expression Detection develop a model to detect a face expression. YOLO provide a model to recognize object(s) in an image and draw a bounding box around them.

Figure 7 shows the training own models of stackML. Training own models are Image Classification, Numeric Classification and Numeric Regression. Image Classification build an image classification model with n number of classes. Numeric Classification creates a model that recognizes numbers in images. Numeric Regression creates a learning model that predicts numbers.
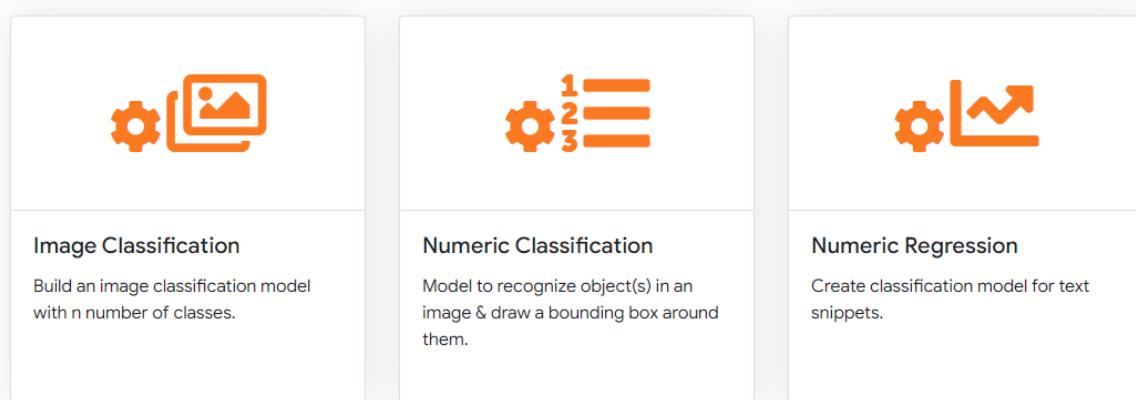
Figure 7. Training models page of stackML
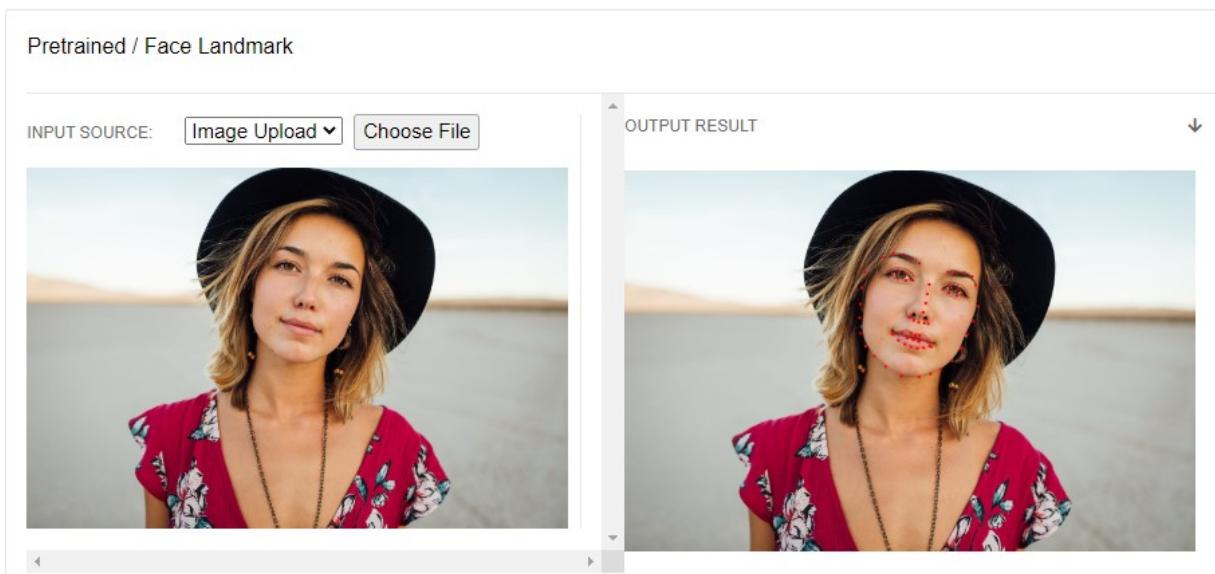
Figure 8. Face landmark model of stackML pre-trained model

Figure 8 shows the case of Face Landmark Model in pre-trained models. From the output result, it can be seen that various landmarks of the face are recognized.

Figure 9 shows the case of creating your own model by learning with pizza image data in the browser.

It lets you choose a template, upload data sets, tweak controls, and train machine learning models right from your browser. Training results indicate training accuracy, verification accuracy, training time, and epoch.
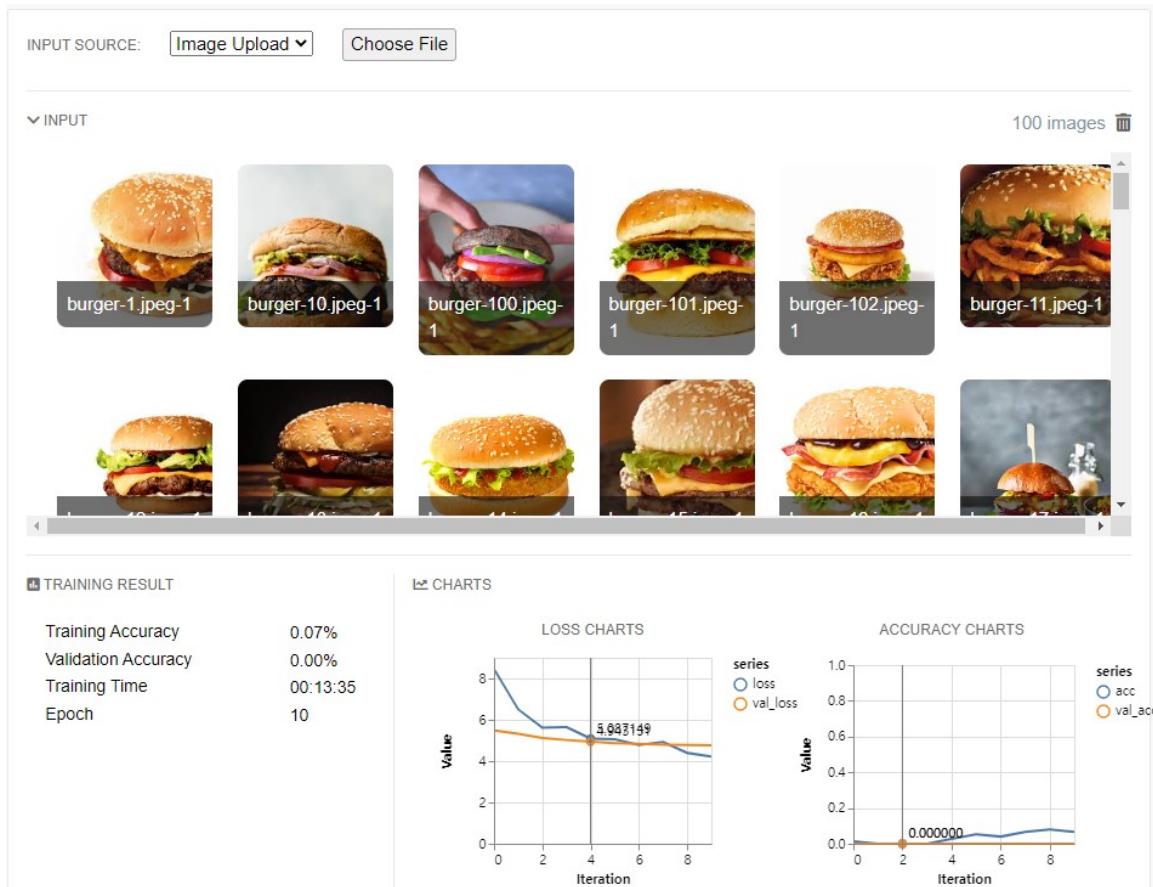
Figure 9. Training own model of stackML

3. ANALYSIS OF NO-CODE MACHINE LEARNING TOOLS

This section compares different features from cloud service providers such as Teachable Machine, and stackML [5-6].

Table 1. Platform, Interface, Feature of No-Code Machine Learning Tools

Tool	Platform	Interface	Feature
Teachable Machine	Browser	Simple GUI	- Training own models
stackML	Browser	Simple GUI	- Training own models - Pre-trained models

Table 1 shows platform, interface and features of no-code machine learning tools. Since both Teachable Machines and stackML run in a browser, there is no need to install additional software, and you can use them

easily through the Simple GUI Interface. Teachable Machines started out as a machine learning tool for kids and only provides Training own models, but the recently released stackML provides Training own models and Pre-trained models [3]. Due to these features, it can be seen that the learning tools you eat support more diverse models.

Table 2 shows training own models, pre-trained models of no-code machine learning tools. Teachable Machines process image, audio, and pose datasets in training own models and provide only classification services, but stackML processes image and text datasets and provides prediction services as well as classification services. It can be seen that the trend of machine learning tools is changing to a service center with high utilization, such as recognizing an object from an image and providing a prediction service from text data.

Table 2. Training own models, pre-trained models of No-Code machine learning tools

Tool	Training own models	Pre-trained models
Teachable Machine	Image Classification Audio Classification Pose Classification	X
stackML	Image Classification Numeric Classification Numeric Regression	Image Classification PoseNet, BodyPix Face Detection, YOLO Face Landmark Detection Face Expression Detection

4. CONCLUSION

In this paper, we looked at Teachable Machines and stackML among No-Code machine learning tools and compared various characteristics of these tools. No-code machine learning is an emerging field that is growing in maturity and flexibility with each passing day. No-code machine learning has transformed the AI landscape. Without coding, AI transforms from a technological niche into an accessible environment. Recent No-Code machine learning tools run in the browser, so you don't need to install any additional software, and they are easy to use through a simple GUI interface. In addition, it can be seen that various models are supported by providing training own models and pre-trained models. It can be seen that it is changing to a service center with high utilization, such as providing a prediction service as well as a classification service. Reviews of No-Code machine learning tools will help people design and develop No-Code machine learning tools or Low-Code machine learning tools.

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