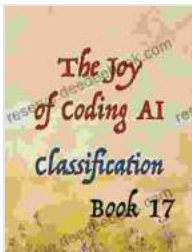


Artificial Intelligence with Classification in p5.js and ml5.js

Artificial intelligence (AI) is a rapidly growing field that has the potential to revolutionize many aspects of our lives. One of the most important subfields of AI is machine learning, which allows computers to learn from data and make predictions. In this article, we will explore how to use AI for classification tasks in p5.js and ml5.js.



The Joy of Coding Book 17: Artificial Intelligence with Classification in p5.js and ml5.js by Mildred Lopez

★★★★☆ 4 out of 5

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Screen Reader : Supported
Enhanced typesetting : Enabled
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What is Classification?

Classification is a type of machine learning task in which a computer is trained to assign a label to a given input. For example, a computer could be trained to classify images of cats and dogs. The computer would learn the features that distinguish cats from dogs, and then it could use these features to classify new images.

p5.js and ml5.js

p5.js is a JavaScript library that makes it easy to create creative coding projects. ml5.js is a library that extends p5.js with machine learning capabilities. Together, p5.js and ml5.js make it possible to create interactive AI applications in the browser.

Data Collection

The first step in any machine learning project is to collect data. For a classification task, you will need a dataset that includes labeled examples. For example, if you are training a computer to classify images of cats and dogs, you will need a dataset that includes images of both cats and dogs, and each image must be labeled as either "cat" or "dog".

There are many different ways to collect data. One option is to use a public dataset. There are many websites that provide free datasets for machine learning projects. Another option is to collect your own data. This can be a more time-consuming process, but it can also give you more control over the quality of your data.

Model Training

Once you have collected your data, you can start training your model. In p5.js and ml5.js, you can use the MobileNet model for classification tasks. MobileNet is a pre-trained model that has been trained on a large dataset of images. This means that you can use MobileNet to classify images without having to train your own model from scratch.

To train your model, you will need to use the ml5.js `train()` function. The `train()` function takes two arguments: the data and the model. The data argument is a collection of labeled examples, and the model argument is the MobileNet model.

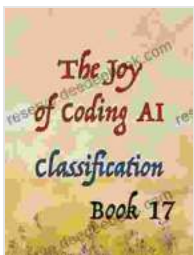
The `train()` function will train your model by iterating through the data and adjusting the model's weights. The goal of the training process is to find a set of weights that minimizes the loss function. The loss function measures the difference between the model's predictions and the true labels.

Deployment

Once you have trained your model, you can deploy it to the web. You can use the `ml5.js save()` function to save your model as a JSON file. You can then upload the JSON file to a web server, and then you can use the `ml5.js load()` function to load the model into your web application.

Once your model is deployed, you can use it to classify images in real time. You can use the `ml5.js predict()` function to make predictions. The `predict()` function takes two arguments: the image and the model. The image argument is an HTML element that contains the image to be classified, and the model argument is the trained model.

In this article, we have explored how to use artificial intelligence for classification tasks in `p5.js` and `ml5.js`. We have covered data collection, model training, and deployment. By following the steps outlined in this article, you can create interactive AI applications in the browser.



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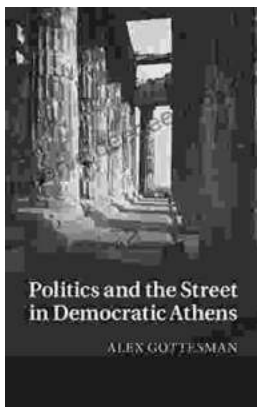
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