Implementing Distributed Training and Autoscaling on SageMaker

Janani Ravi
CO-FOUNDER, LOONYCORN

www.loonycorn.com

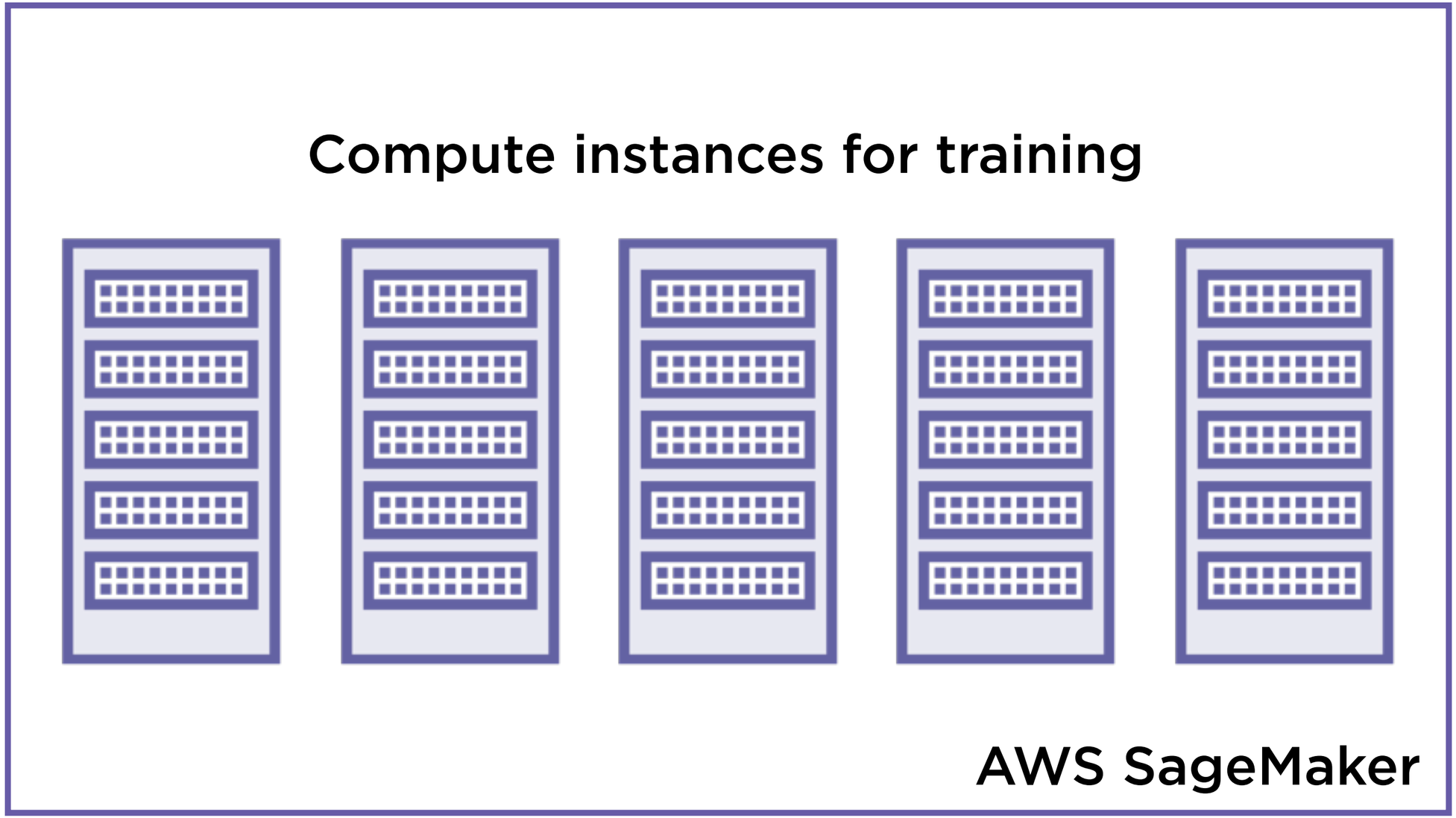
Overview

Train a custom model in TensorFlow in a distributed manner on multiple instances

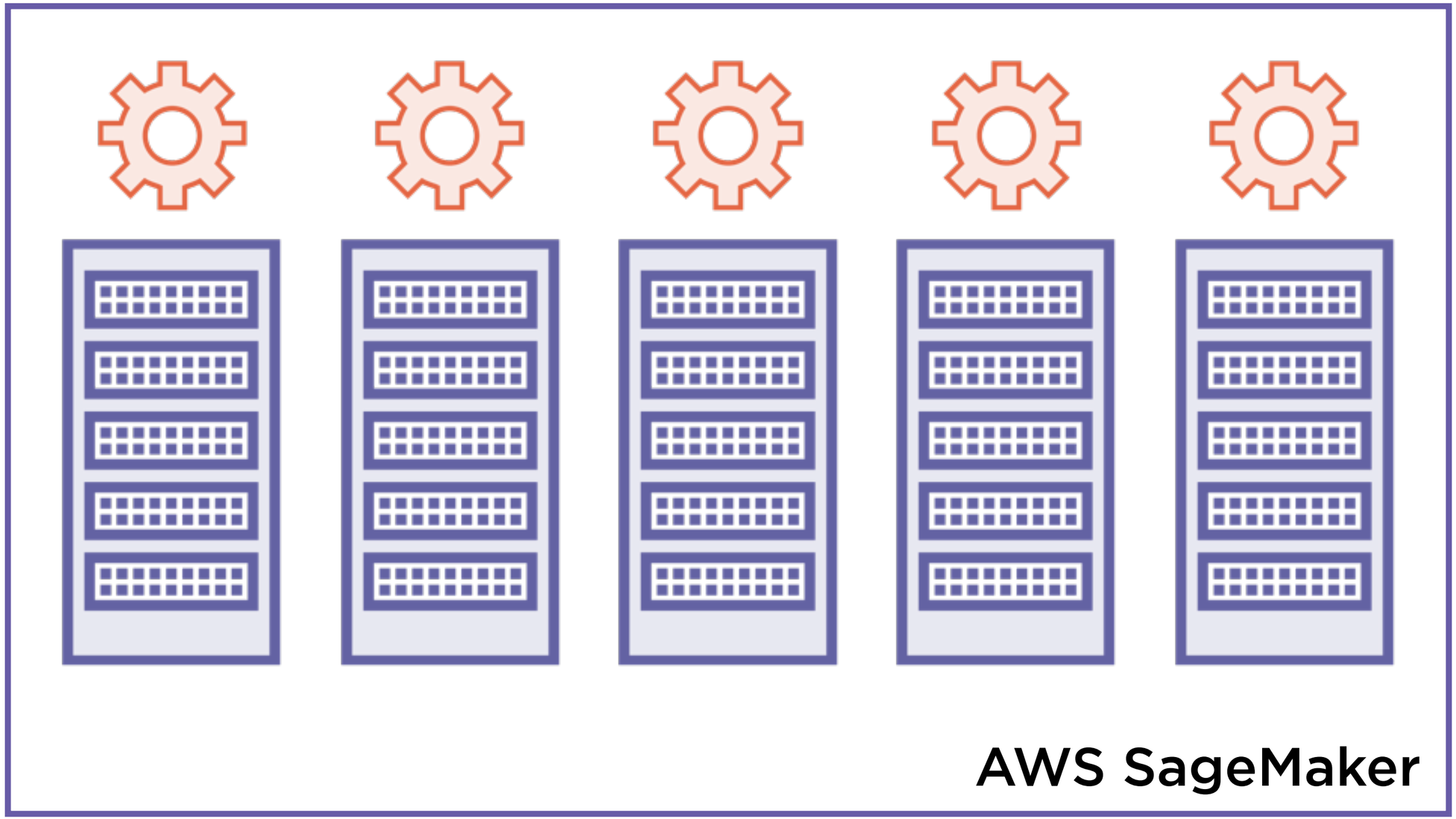
Configure hosted model variants to be autoscaled

Distributed Training

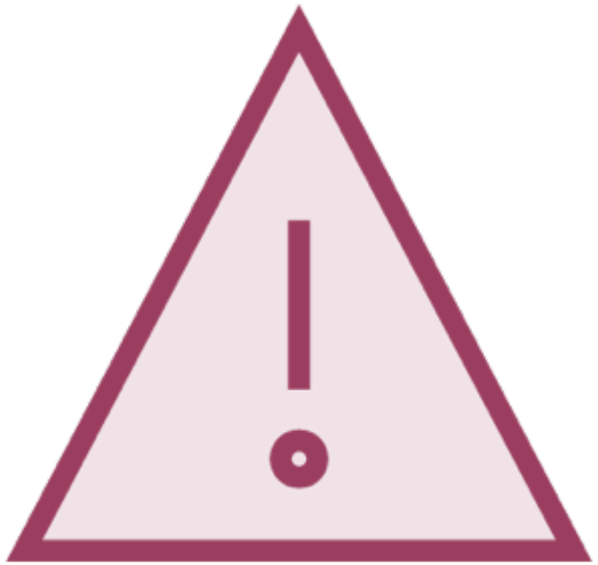
Training a Model



Training a Model



Custom Models in TensorFlow



Code in Python 2.7

Current TensorFlow version is 1.5

To train and host custom code on SageMaker the code needs to follow a certain **training** and **inference interface**

```
model_fn(features, labels, mode, hyperparameters)
```

TensorFlow Training Code Interface

Defines the model that will be trained

```
train_input_fn(training_dir, hyperparameters)
```

TensorFlow Training Code Interface

The function which pre-processes and loads the training data in the format expected by the model

```
eval_input_fn(training_dir, hyperparameters)
```

TensorFlow Training Code Interface

The function which pre-processes and loads the evaluation data in the format expected by the model

```
serving_input_fn(hyperparameters)
```

TensorFlow Training Code Interface

Defines the features to be passed to the model during prediction

```
input_fn(data, content_type)
```

TensorFlow Inference Code Interface

Function which transforms the input data for prediction

If omitted, Sagemaker provides a default input function which supports protobuf, CSV or JSON encoded array

```
output_fn(data, accepts)
```

TensorFlow Inference Code Interface

Serializes the prediction result

If omitted, Sagemaker provides a default output function which serializes to protobuf, CSV or JSON encoded array

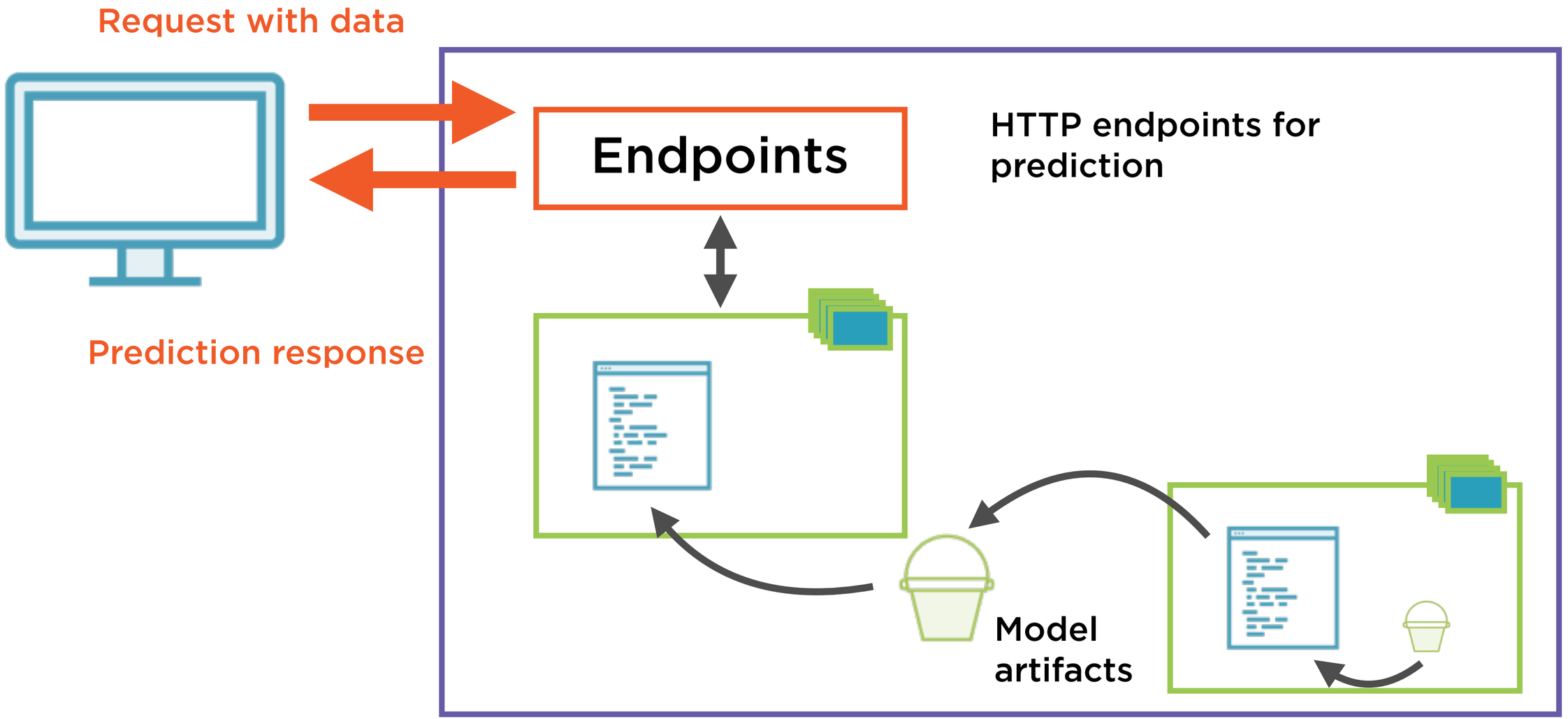
Demo

Use a convolutional neural network in TensorFlow to classify MNIST digits

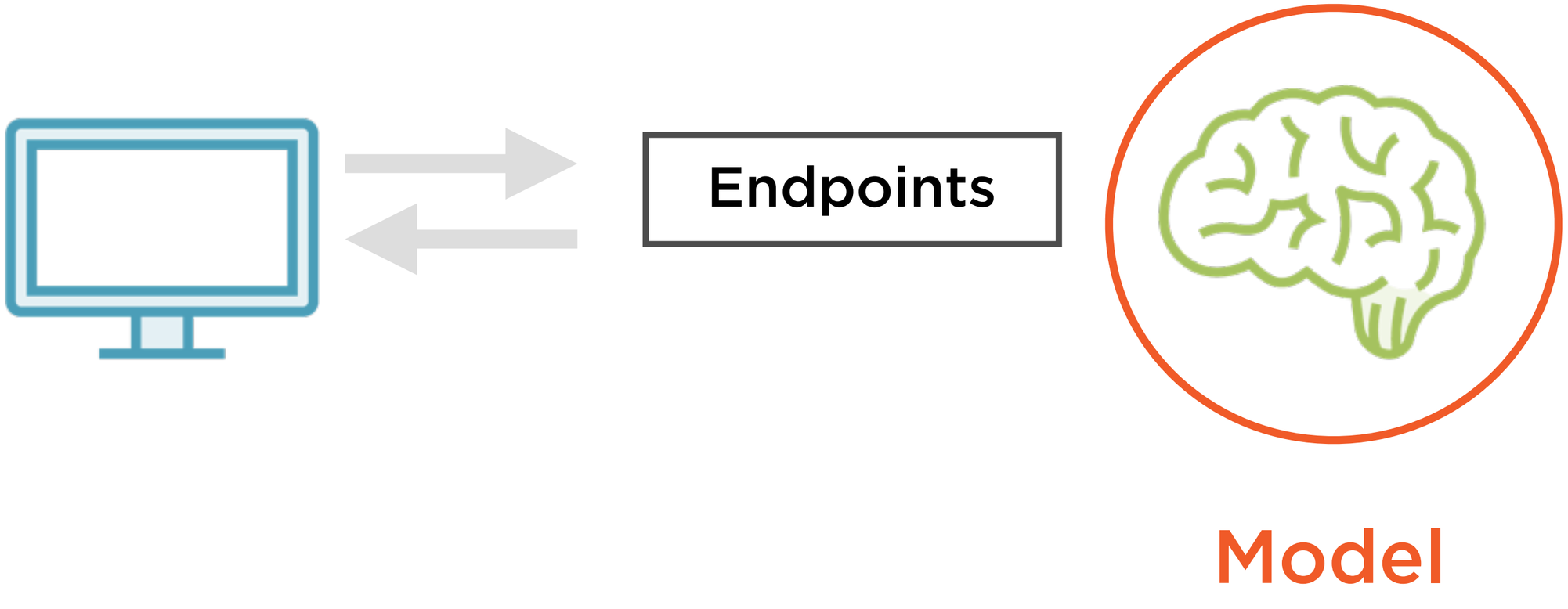
Run training in a distributed manner across multiple instances

Autoscaling Model Variants

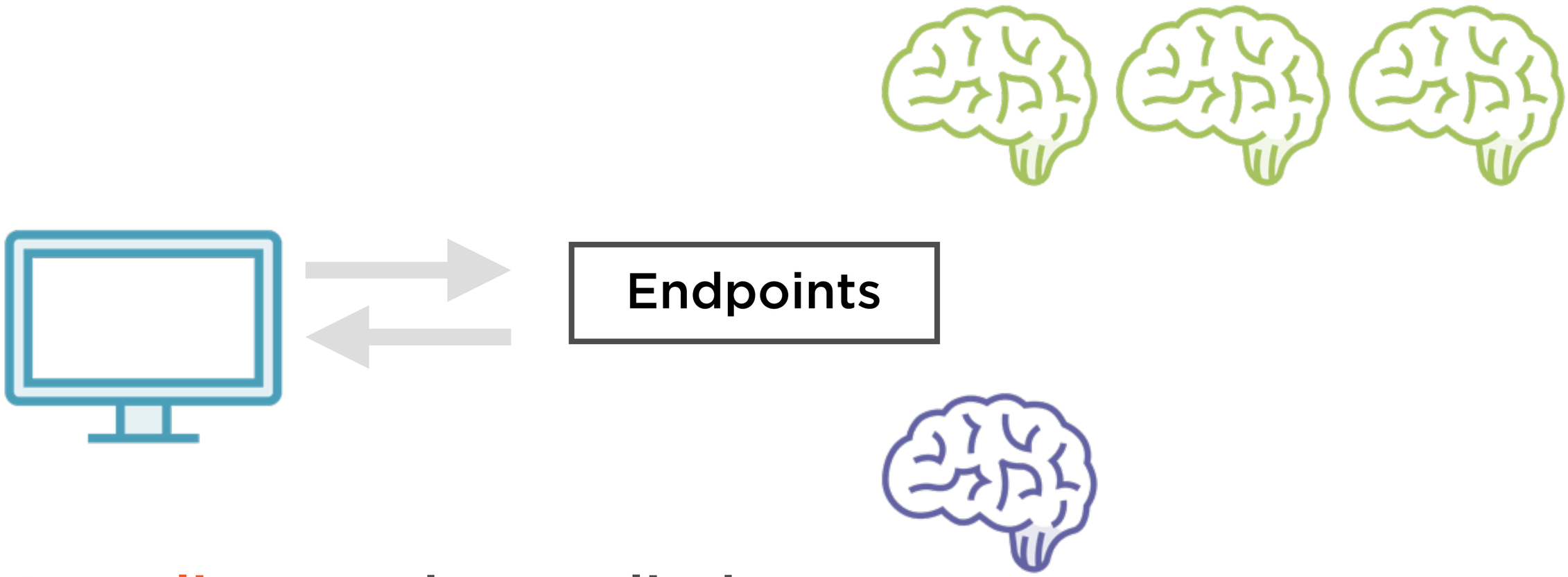
Deploying a Model



Deploying a Model



Autoscale Model Variants



Autoscaling can be applied to any production variant

Demo

Configure autoscaling on a deployed model variant

Summary

Distributed training using a TensorFlow machine learning model

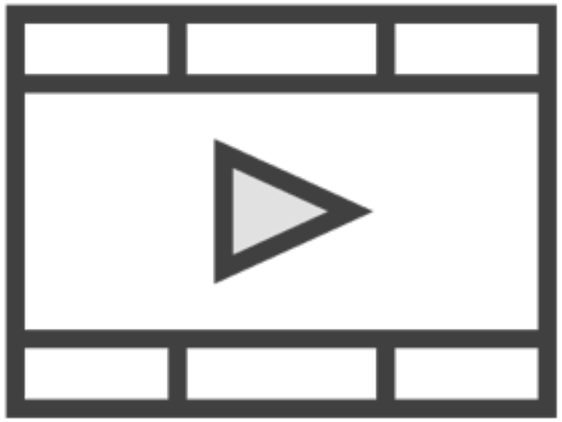
Configure hosted model variants to be autoscaled

Books

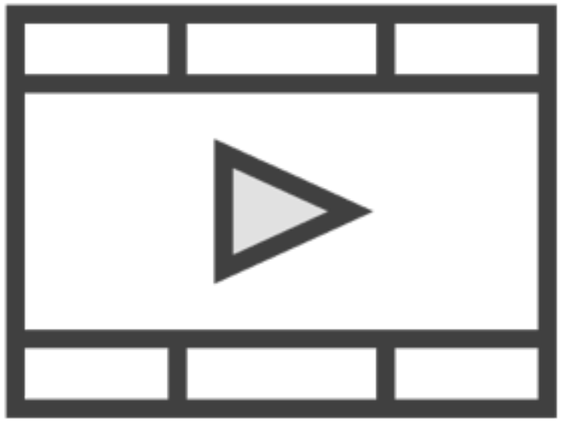
Hands-On Machine Learning with Scikit-Learn and TensorFlow

by Aurélien Géron

Related Courses



Getting Started with Azure Machine Learning



Related Courses

Building Unsupervised Learning Models with TensorFlow

Building Classification Models with TensorFlow

Sentiment Analysis with Recurrent Neural Networks in TensorFlow