**The Model Asset Exchange**

**The Model Asset Exchange, or “MAX”, on the IBM Developer platform, is a free open source resource for deep learning models.**

The tasks needed to train a model from scratch require a large amount of data, labor, time, and resources. Because of this, time to value can be quite long. To reduce time to value, consider taking advantage of pre-trained models for certain types of problems. These pre-trained models can be ready to use right away, or they might take less time to train. Models are created by running data through a Model using compute resources and domain expertise. After research, evaluation, test, train and validate steps are complete, you will have a validated model.

The Model Asset Exchange is a free open source repository for ready-to-use and customizable deep learning microservices. These microservices are configured to use pre-trained or custom-trainable deep learning models to solve common business problems. These models have been fully tested, and can be quickly deployed in local and cloud environments.

All models in MAX are available under permissive open source licenses, making it easier to use them for personal and commercial purposes, which reduces the risk of legal liabilities.

**On MAX, you can find models for a variety of domains, including: Object detection, Image, audio, video, and text classification, Named entity recognition, Image to text translation, Human pose detection, and more.**

Let’s look at the components of a typical model-serving microservice. Each microservice includes a pre-trained deep learning model, code that pre-processes the input before it is analyzed by the model, code that post-processes the model output, and a standardized public API that makes the services functionality available to applications. Model-serving microservices are created by running inputs through a validated model and then applying the output to a rest API. After implement, package, document, and test steps are complete, you will have a model-serving microservice that can then be sent to a Local machine, or a Private, Hybrid, or Public cloud.

**MAX model-serving microservices are built and distributed as open source Docker images**. Docker is a container platform that makes it easy to build and deploy applications. The Docker image source is published on GitHub and can be downloaded and customized for use in personal and commercial environments.

Use the **Kubernetes** open source system to automate the deployment, scaling, and management of these Docker images.

**Red Hat OpenShift** is a popular enterprise-grade Kubernetes platform. It is available on IBM Cloud, Google Cloud Platform, Amazon Web Services, and Microsoft Azure.

Let’s explore some machine learning models. **Go to ml-exchange.org**.

Here you can view and use multiple predefined models. We'll explore the predefined object detector model. This model will recognize objects in an image because it consists of: a deep convolutional net base model for image feature extraction, and added convolutional layers specialized in object detection. On the MAX object detector page, select CodePen. **CodePen is an online tool used by developers to edit front-end languages like HTML, JavaScript, and CSS**. You will be redirected to the CodePen page, where you can select **MAX Tensorflow.js model. This model is trained to identify objects in an image and assigns each pixel of the image to a particular object.** Here you can upload different imagesof a person, dog, cat, truck, or car. The model was previouslytrained on labeled images, so now it can recognize imageseven when they are not labeled. Select an image to see what happens whenthe model invokes the prediction endpoint. Click on Extract prediction. This invokes theprediction endpoint, and the image is uploaded. The prebuilt TFJS model preparesthe input image for pre-processing. The deep learning model algorithm identifiesthe different objects in the image. It generates its response using the predictionresults and returns the result to the application. You will see the existing imageseparated into two different images: the background image and the image of the dog. The model test is complete. You have confirmed that this model is able to identify items within an imagewithout using predefined labels.

**In this video, you learned:**

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Red Hat OpenShift is a Kubernetesplatform used to automate deployment, scaling, and management of microservices.

Ml-exchange.org has multiple predefined models.

The CodePen tool lets usersedit front-end languages.