Visual Recognition Workshop

Lab 1 : Using Visual Recognition with UI

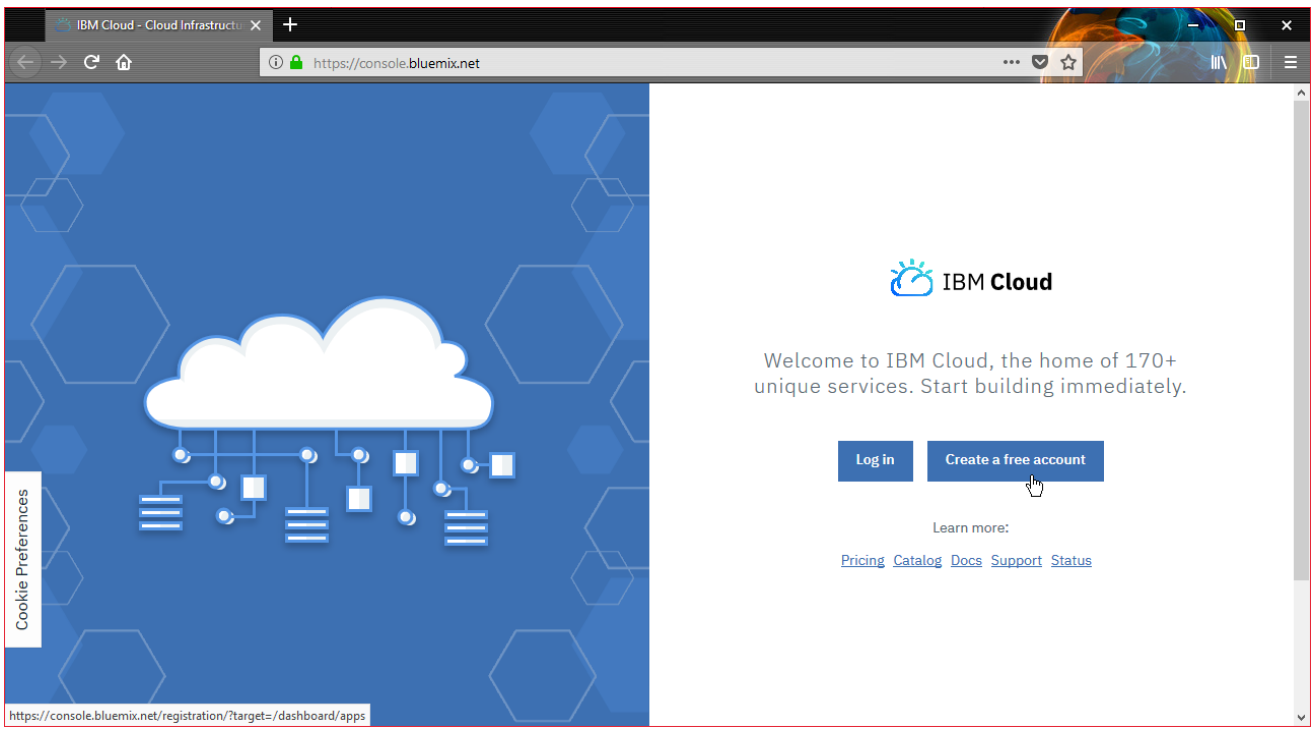
Objective

This lab will teach you how to build an image classifier using IBM's Visual Recognition service which uses machine learning to determine what is contained in the image. In these labs, we will train Watson to detect that a customer's pizza is messed up (e.g. burned, toppings pushed to one side, cheese stuck to the box, etc.) versus a pizza that isn't. You could imagine a Pizzeria using this for automatically sending a new pizza to customers that complained about a pizza delivery for example.

The first part of this lab will show you how to create a Visual Recognition Service, and use its tooling to test Watson provided models.

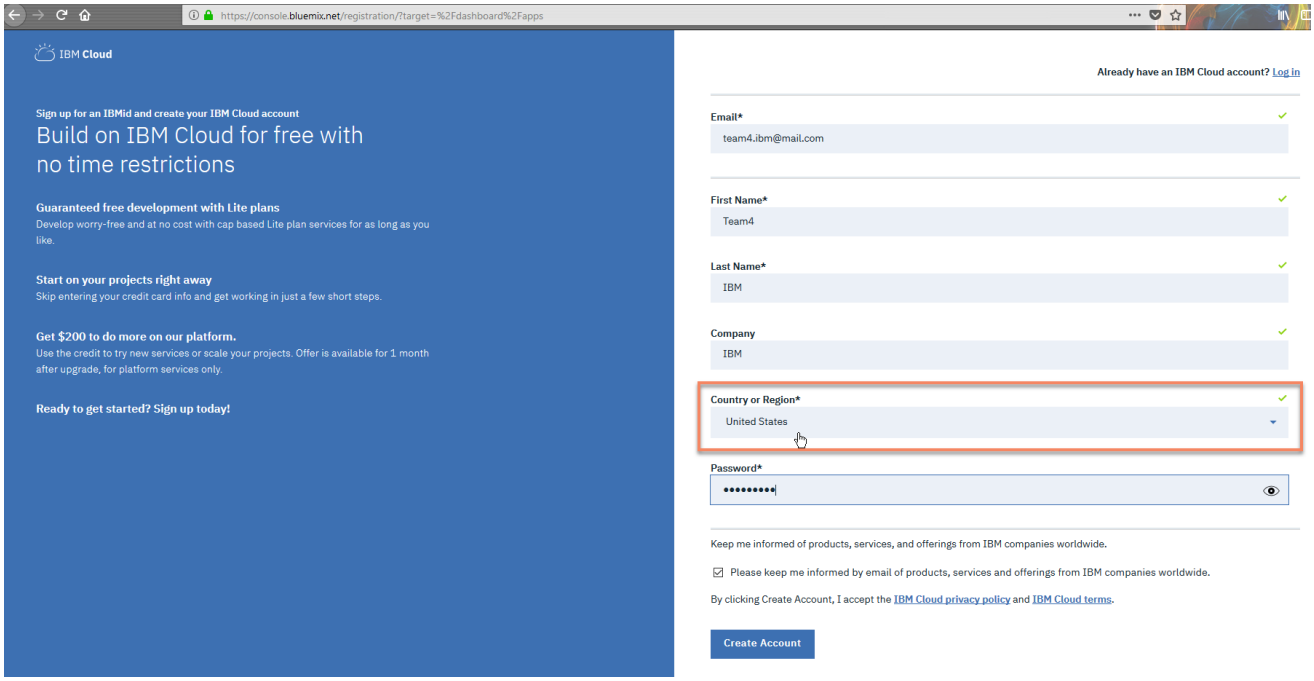
Create an IBM Cloud Account

Go to IBM Cloud site on https://console.bluemix.net and click on **Create a free account**

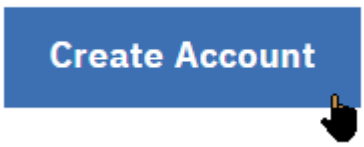


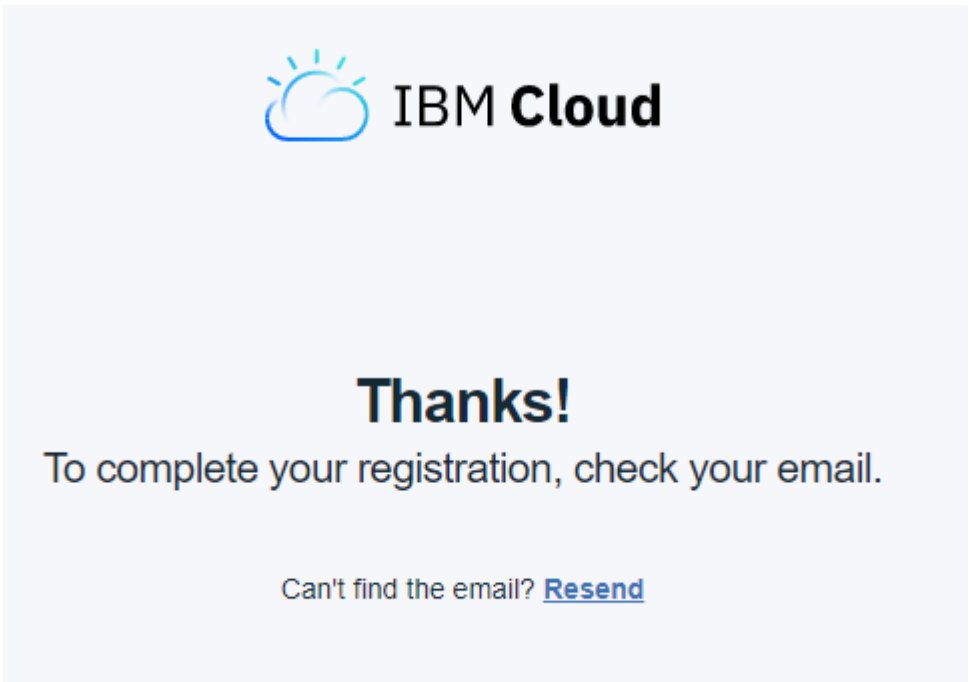
On the next screen, enter your email (or alias), Last Name, First Name and Password.

> **IMPORTANT** : Specify `United States` as country to be able to use beta features of IBM Cloud.



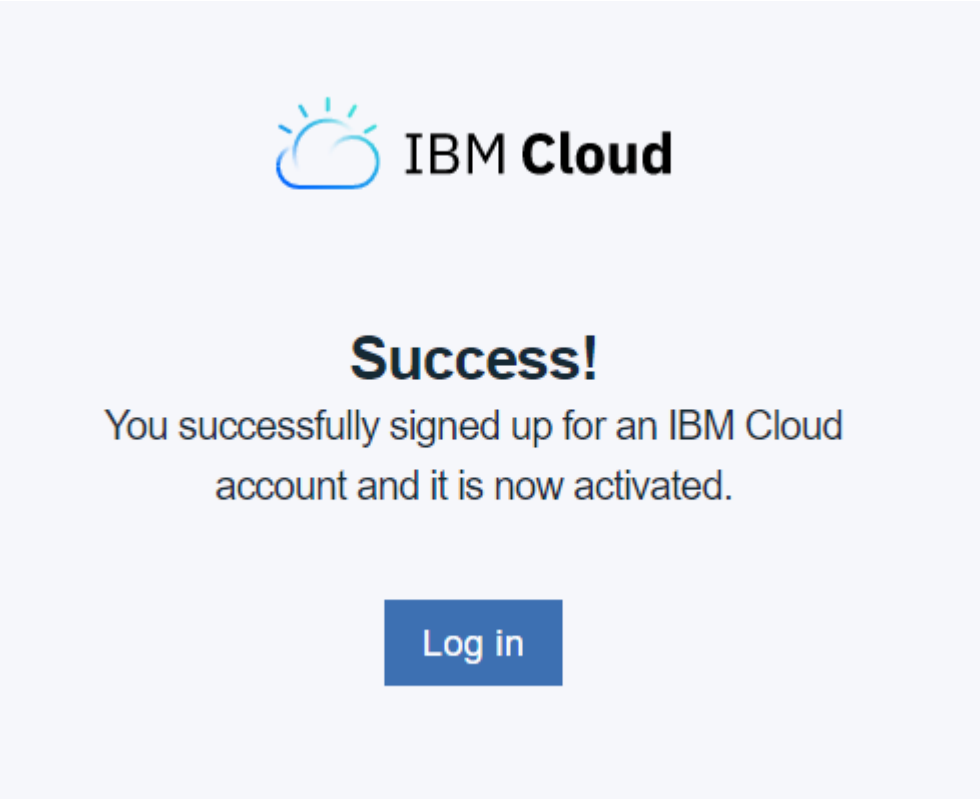
Then click on `Create Account`





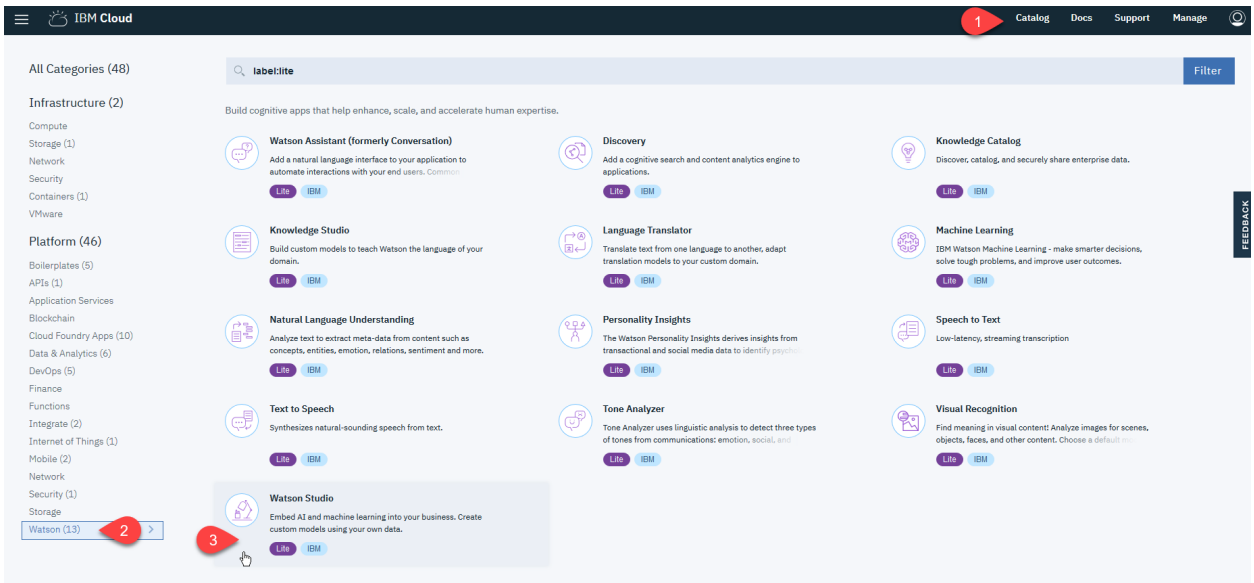
A confirmation email should be sent shortly, entitled `Action required: Confirm your IBM Cloud account`. Follow the instructions in this message to validate your account on IBM Cloud.

After having confirmed the creation of the account, proceed to login

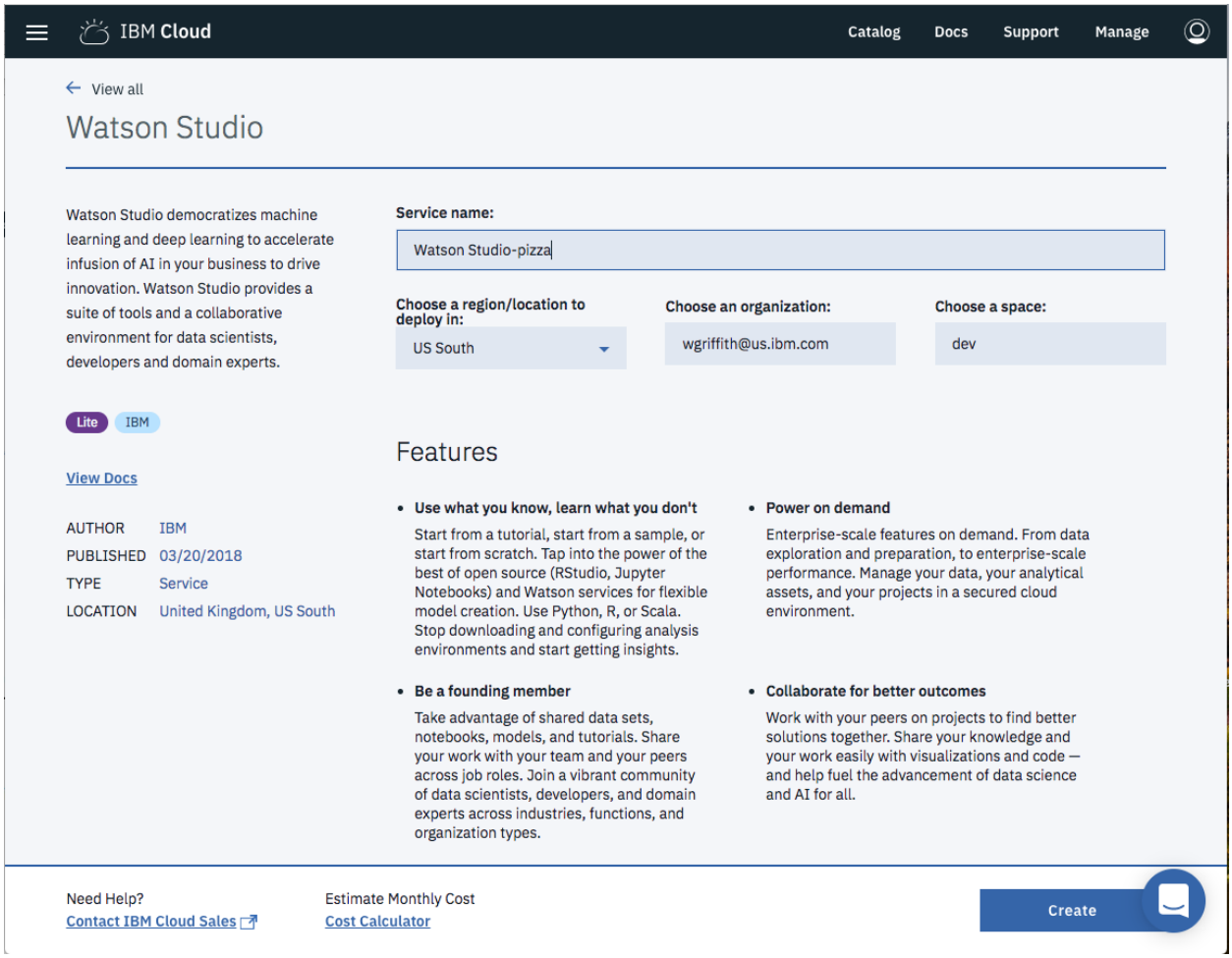


Create the service on the IBM Cloud

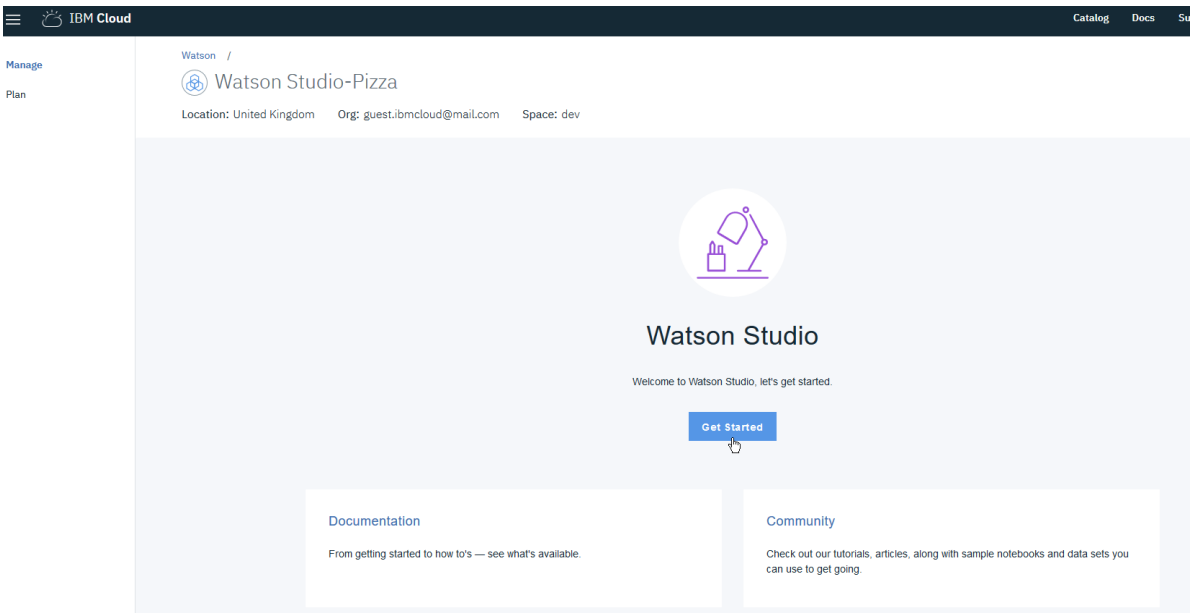
1. Login to the IBM Cloud : https://console.bluemix.net
2. Go to the IBM Cloud **Catalog** and select **Watson** category.



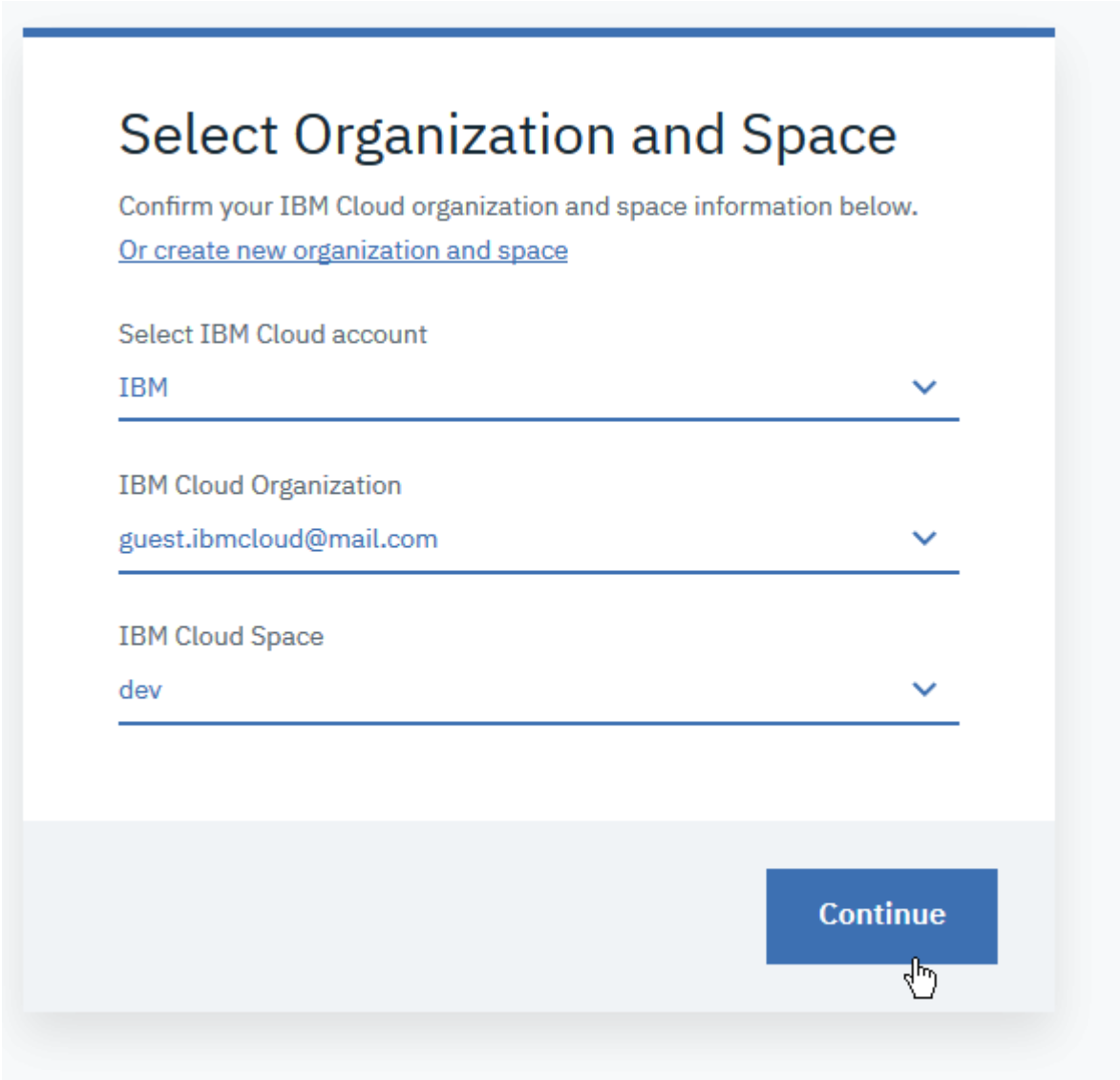
3. Then click the **Watson Studio** tile, then choose a name for your service (e.g. Watson Studio-pizza), then click the **Create** button.



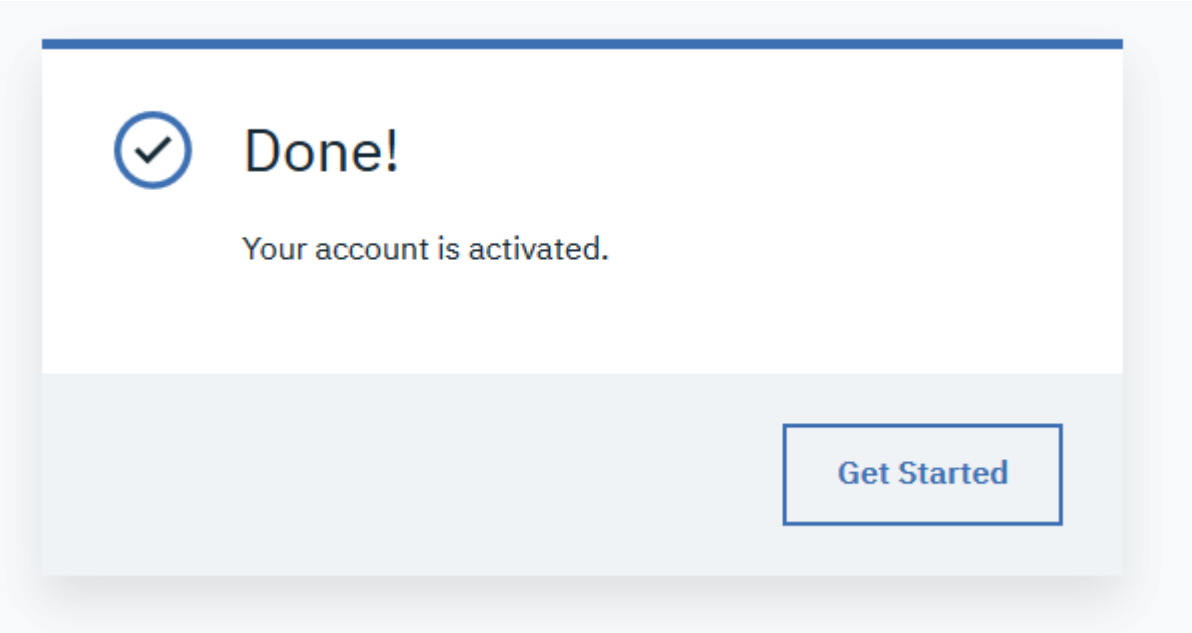
- Watson Studio is the tool for building AI models in a collaborative fashion so you can provide a more democratic training process that reduces AI biases.



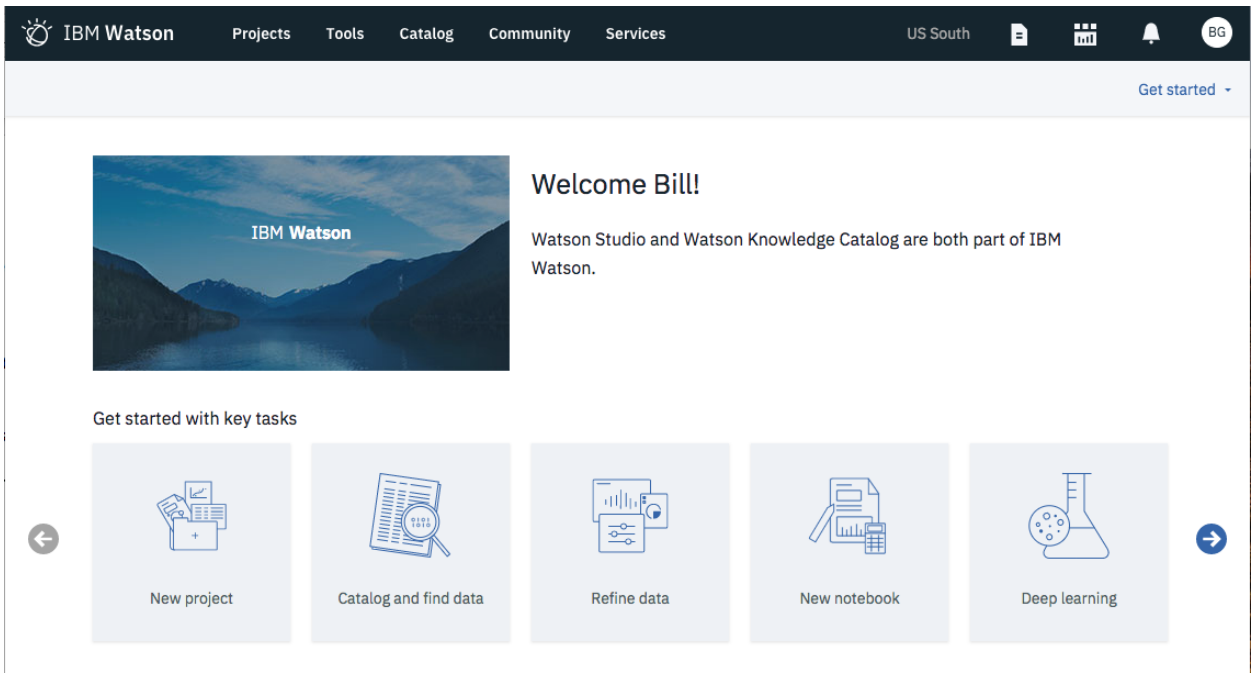
4. Click the **Get Started** button to open **Watson Studio**.
5. Click on **Continue** to select existing Oragnization and Space.
6.



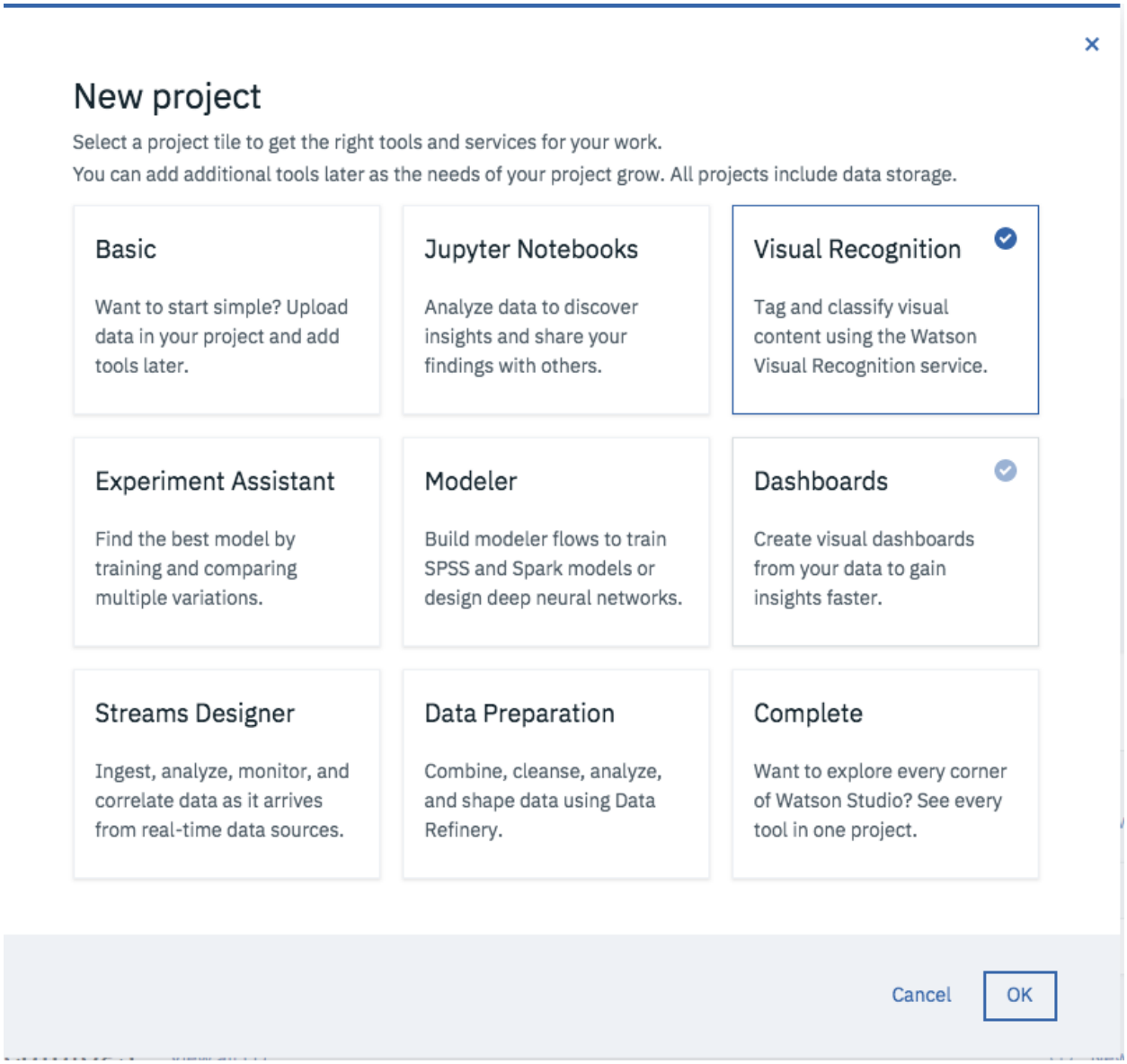
7. Click on **Get Started** to access your activated Watson Studio account



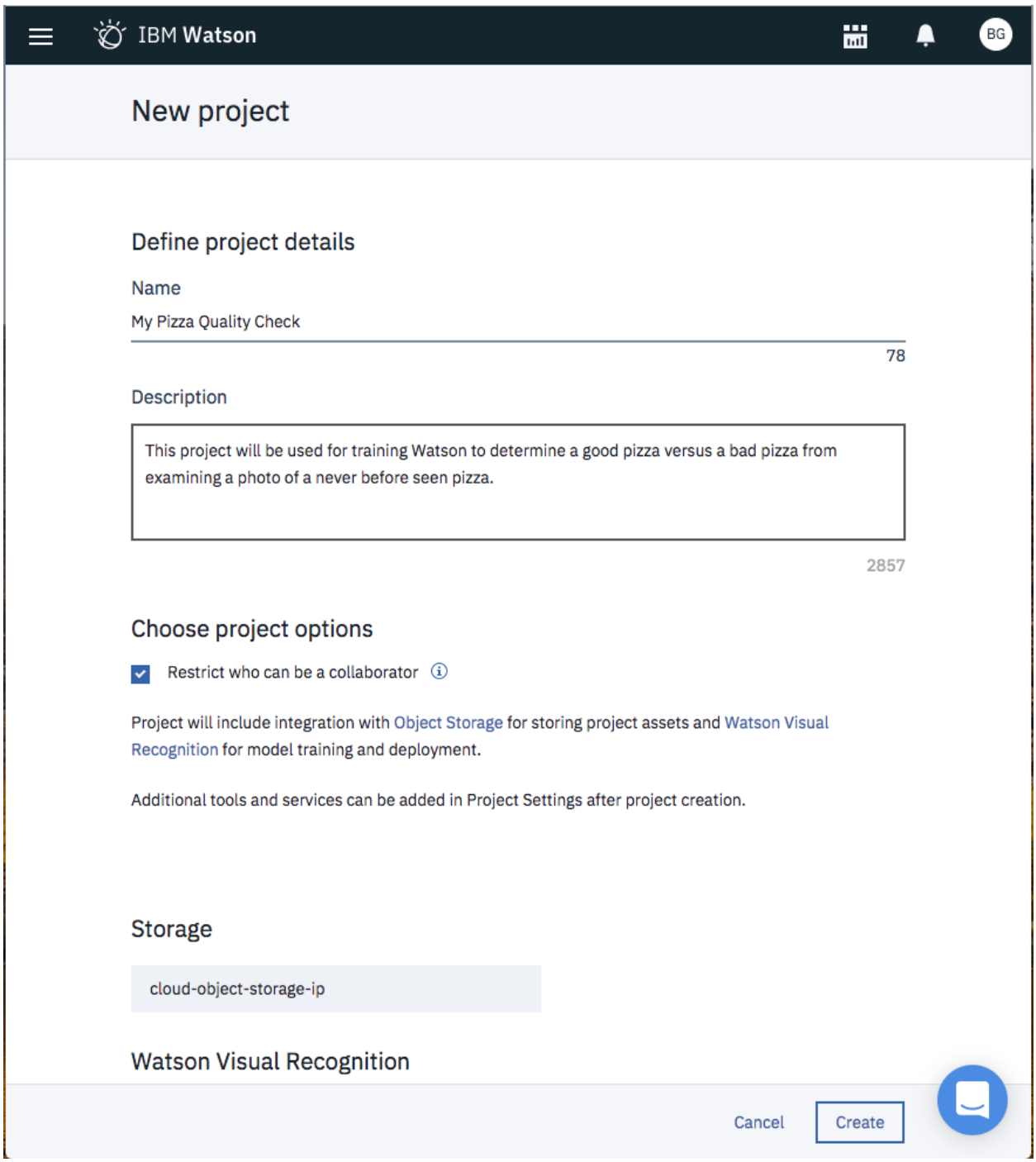
8. You can follow the Watson Studio introduction, and when ready, click the **New project** tile to begin this new custom image recognition model.



9. Choose the **Visual Recognition** template and click **OK**.



10. Enter a name for your project (e.g. My Pizza Quality Check) and a description if you like then click the **Create** button.



    - This project will create a Watson Visual Recognition service and the needed Cloud Object Storage.

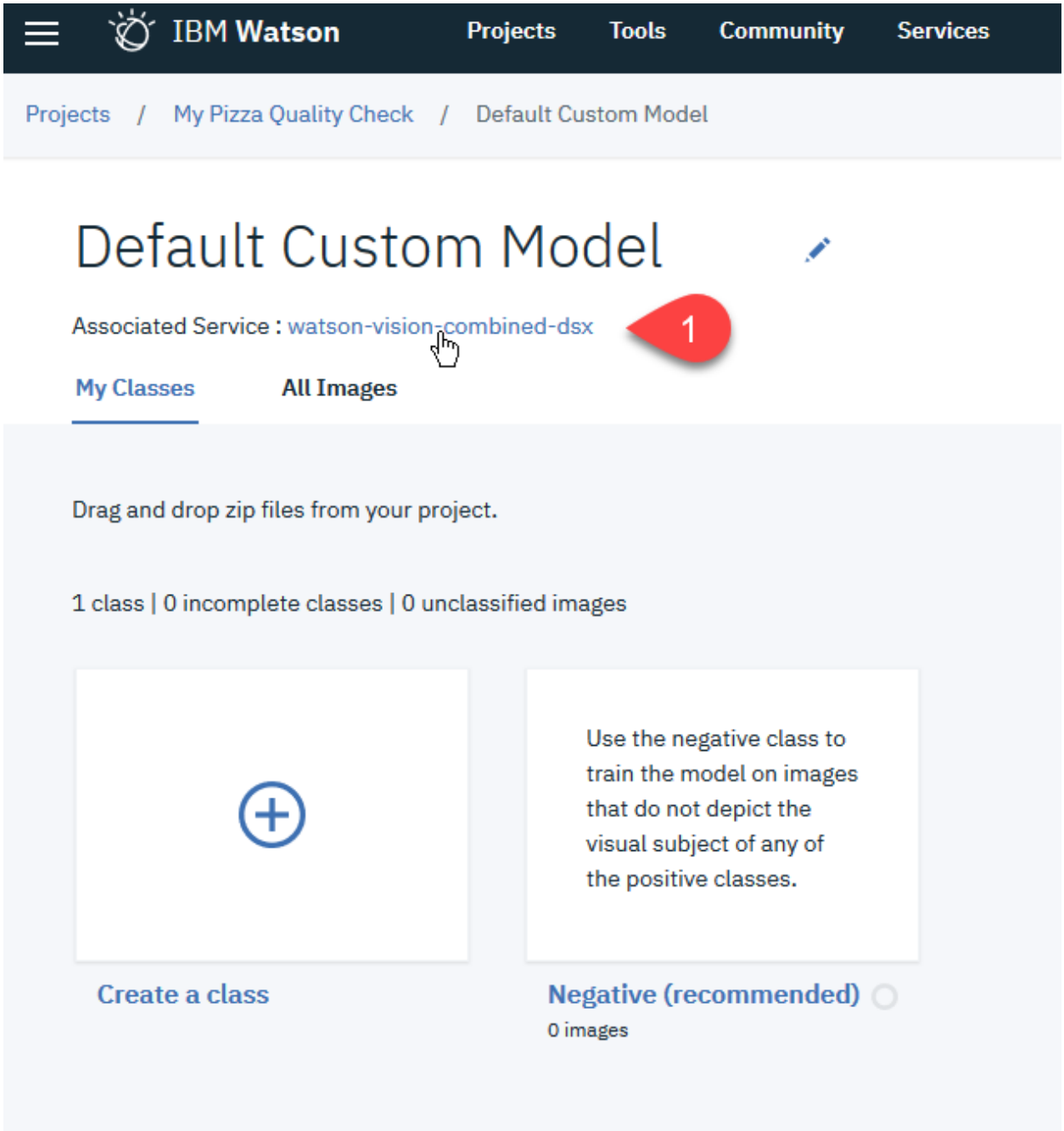
Great! You have created a new machine learning project that you can collaborate on with others, upload data-sets, and create training models. Additionally, this project wizard has instantiated the Watson Visual Recognition service that is pre-trained on millions of consumer oriented images and can be used with no additional training (as we'll see below).

However, since consumer data represents only 20% of the world's data, we will create a custom model below to teach Watson your business and what insights are in your images that consumer trained visual recognition software just doesn't cover.

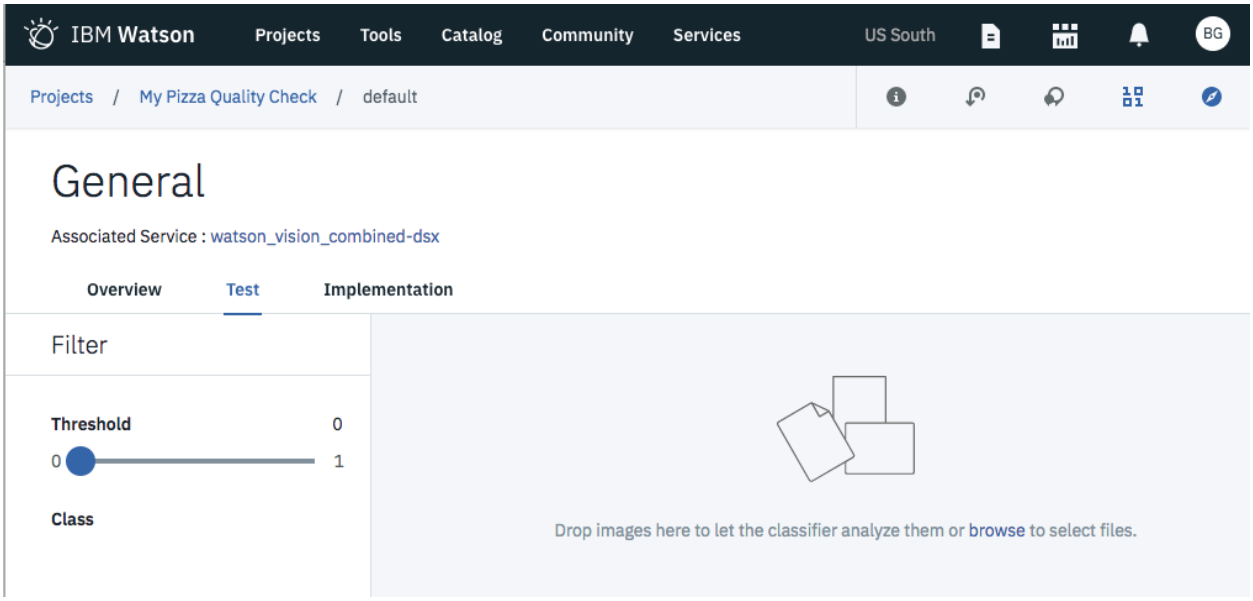
Test the General model

Before creating a custom model, let's check out the **General** model and the **Food** model that IBM has already trained on millions of images.

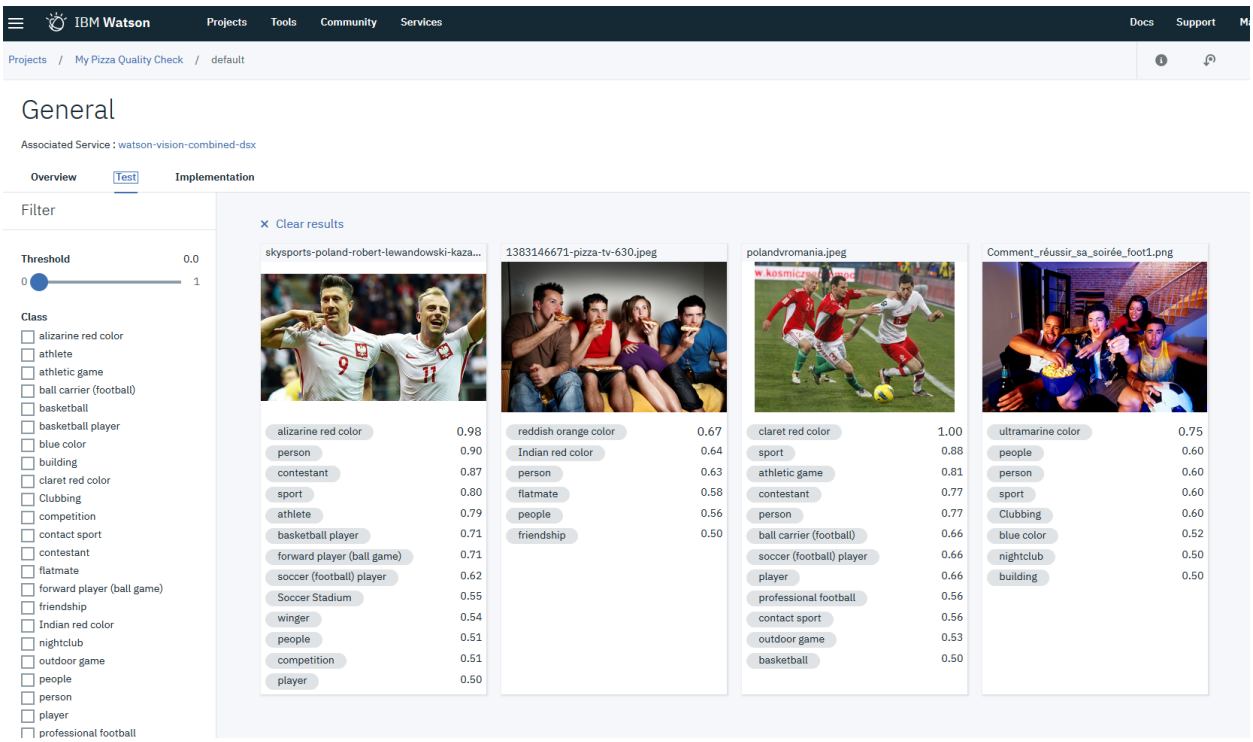
1. Click the **watson_visual_combined-dsx** link for the Watson Visual Recognition service that was automatically created for you.



2. Click the **Test** button of the **General** model panel.
3. Click the **Test** tab of this model to upload an unlabeled image that Watson will examine to determine what insights can be gleaned from Watson's training of millions of images.



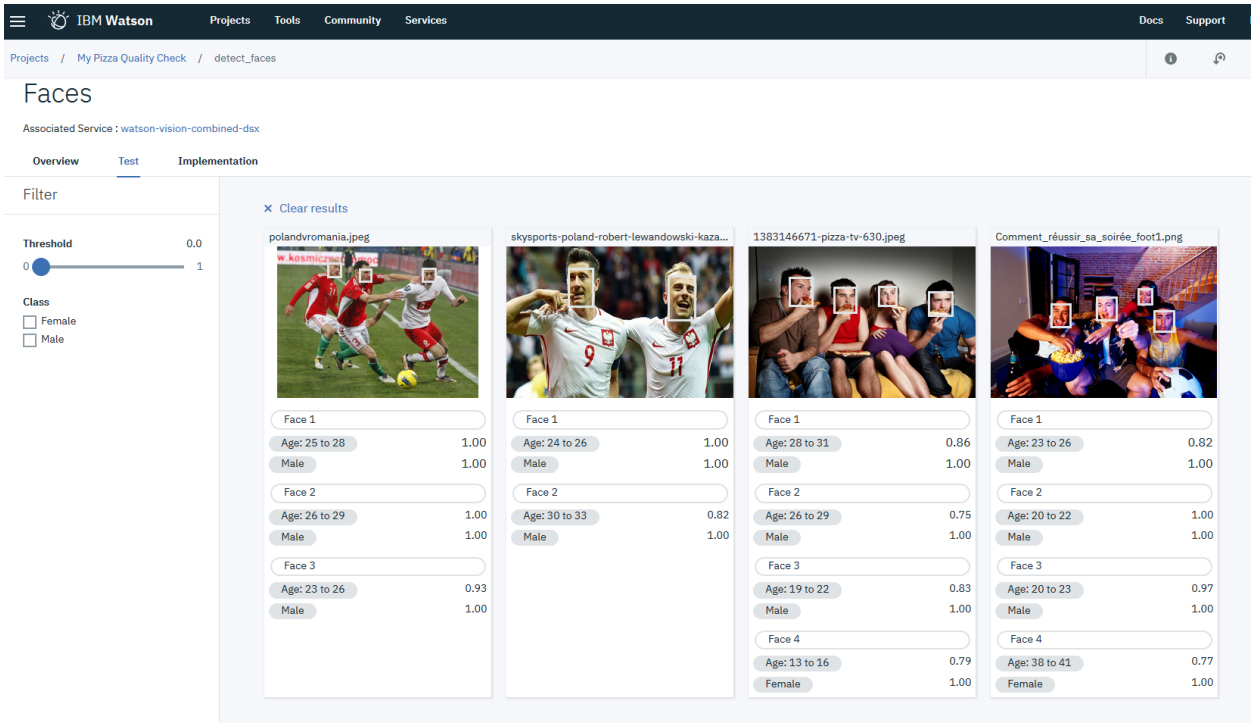
4. Locate your favorite image search tool to find test images or use your personal images and drag images from `Test images` folder



- Notice it displays the confidence score (which is the statistical probability of this classification against other classifiers in this model).

Now let's explore the Faces model.

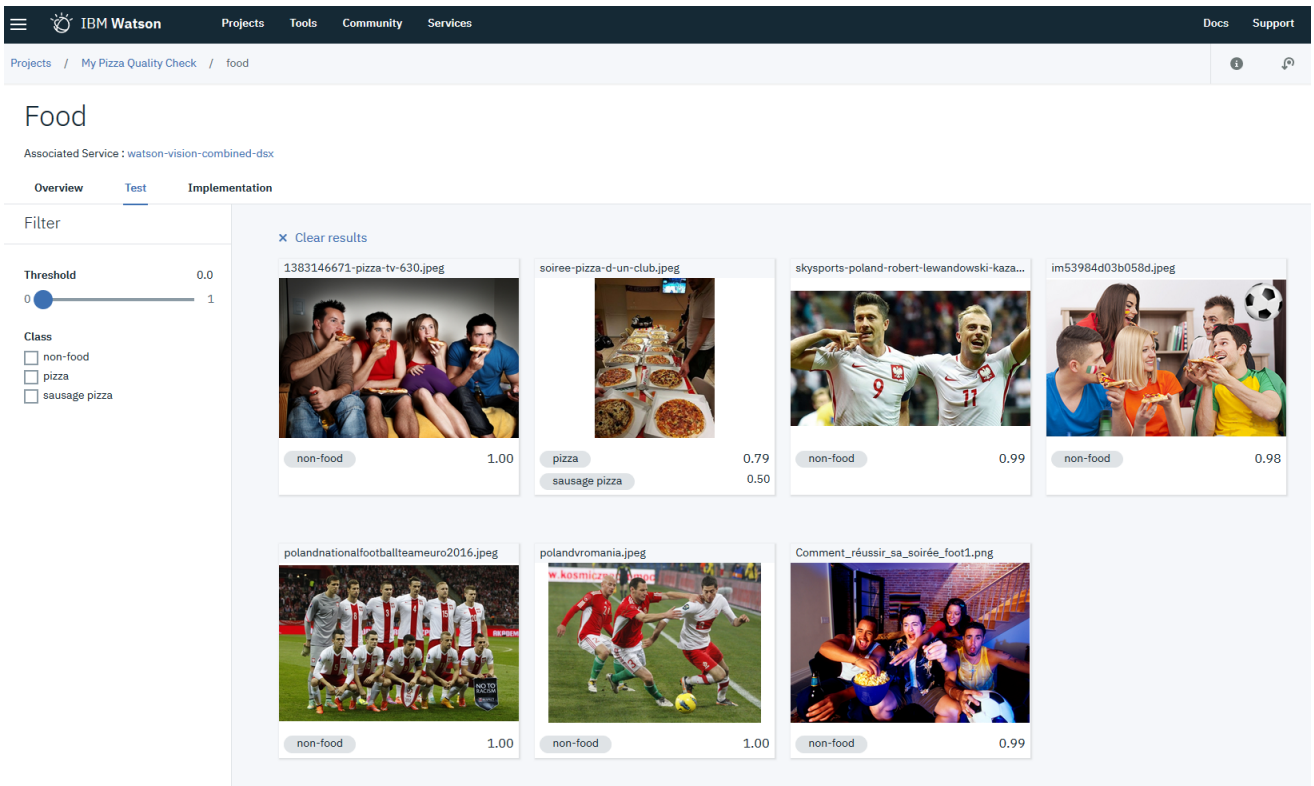
1. Click the **watson_vision_combined-dsx** link to return to the model choices.
2. Click the **Test** button of the **Faces** model.
3. Click the **Test** tab of this model then drag images from `Lab1/Lab1 - Test images` folder on the canvas.



As you can see, the Faces model not only detect the number of persons, but also the gender and an estimate of the age. It also locates the position of each faces on the picture.

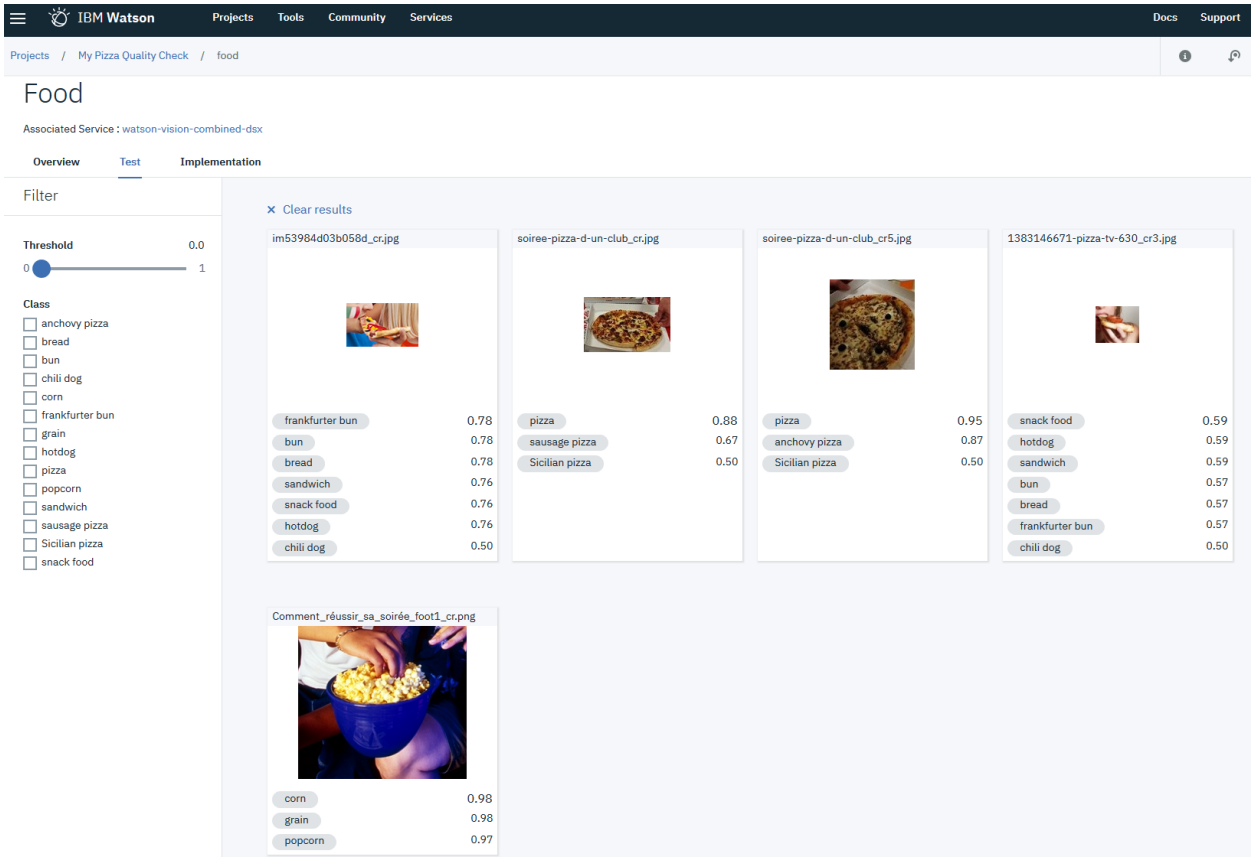
Now let's explore the food model.

5. Click the **watson_vision_combined-dsx** link to return to the model choices.
6. Click the **Test** button of the **Food (Beta)** model.
7. Click the **Test** tab of this model then drag images from `Lab1/Lab1 - Test images` folder.



5. You might notice that almost none of the pictures of detected as food. This is because this model is trained to recognize food only when it is the main subject of the picture.

6. Now drag images from `Crop` folder.



As can see, it might be usefull to divide an image in multiple tiles before querying Visual Recognition service. As you will see in another lab, it might also be interesting to chain multiple classifier, from a generic one to a specific one to achieve expected results.

Out of the box, Watson can tell you what kind of objects are in a photo even though these are your private photos that have not been indexed by a search engine nor contain labeled tags that tell Watson what the photo is about -- instead Watson can deduce this by comparing your photo against the millions of labeled photos that Watson has been trained on.

Yet still, these millions of photos are a drop in the bucket compared to how many photos are in the world and only come from the small 20% of consumer facing data, which leaves 80% of data behind your firewall -- and inside this data is your companies competitive edge.

Therefore, let's examine how easy it is to teach Watson something that consumer oriented AI doesn't do.