

Visual Recognition on Watson Studio

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Agenda

- Watson 圖像辨識總覽
- 打造圖像辨識模型
- 重複訓練



1. 圖像辨識總覽

Let's go start

利用 Watson Studio 快速建制圖 象辨識的模型

甚至不需要寫一程式

幾乎任何視覺內容都可以分類

Watson VR 能夠辨識影像內容

訓練模型只需要數分鐘

客制化專用的圖像辨識模型



General Model

Quickly understand objects, actions, scenes, and colors within an image.

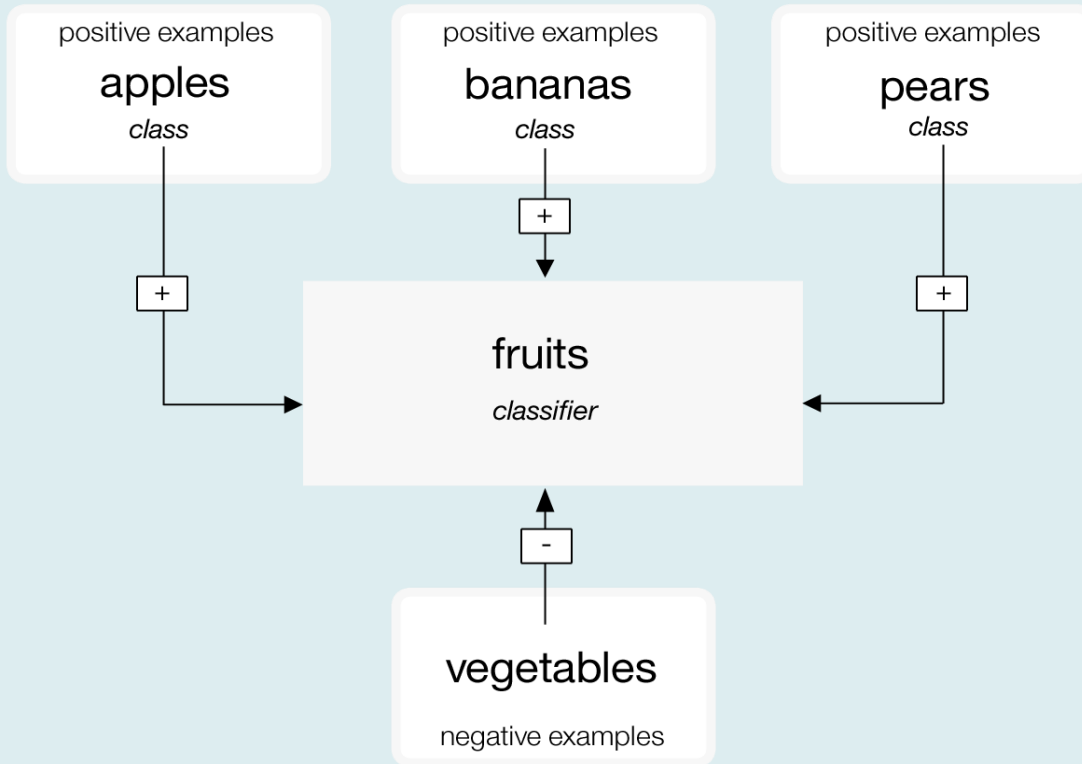
fabric	0.96
gray color	0.95
Harris Tweed (jacket)	0.87
clothing	0.80
tweed	0.79
garment	0.52
overgarment	0.52
coat	0.51
Norfolk jacket	0.50

Face Model *(no results)*

Food Model +

Explicit Model +

TRY NOW | <https://www.ibm.com/watson/services/visual-recognition/demo/#demo>



Before start

- > **There are some rules you need to know!**
 - > 訓練圖片跟測試圖片要一定程度的相似
 - > 訓練與測試圖片內容須單純



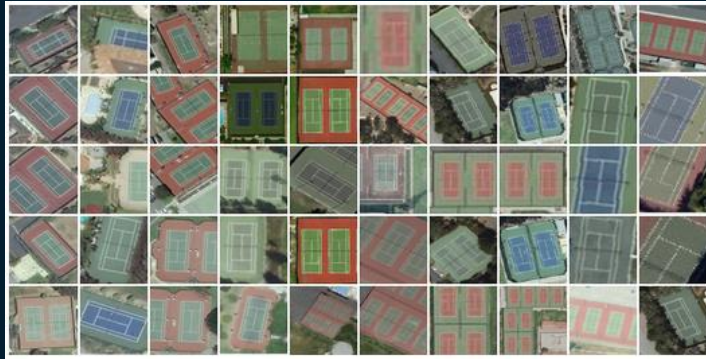
Before start

> There are some rules you need to know!

每個分類
10 張照片 > Watson
訓練集 > 每個分類
10000 張照片

0 > 信心指數 > 1

Good



Bad



> There are some rules you need to know!

maximum

10,000
images or
100 MB per
.zip file

10 images
per .zip file

minimum

maximum

250 MB per
training call

32X32 pixels

minimum



2. 打造圖像辨識模型

Let's build your own model!!

建立 Visual Recognition 服務

型錄 > AI分類 > Visual Recognition

IBM Cloud

型錄

文件

支援

管理

搜尋資源...

宜聯 李's Account



所有種類 (57)

運算 (10)

容器 (1)

聯網

儲存空間 (1)

AI (15)

分析 (4)

資料庫 (3)

開發人員工具 (7)

整合 (3)

物聯網 (1)

安全及身分 (2)

入門範本套件 (2)

Web 及行動 (2)

Web 及應用程式 (6)

AI



Watson Assistant

精簡 • IBM

Watson Assistant 可讓您在任何應用程式、裝置或遠端中建置交談式介面。



Compare and Comply

精簡 • IBM

處理控管文件以轉換、識別、分類及比較重要元素。



Discovery

精簡 • IBM

新增認知搜尋與內容分析引擎至應用程式。



Knowledge Catalog

精簡 • IBM

Discover, catalog, and securely share enterprise data.



Knowledge Studio

精簡 • IBM

教授 Watson 您的領域語言。



Language Translator

精簡 • IBM

將文字、文件和網站從一種語言翻譯為另一種語言。透過服務的自訂作業功能，建立業界或區域特定的翻譯。



Machine Learning

精簡 • IBM

IBM Watson Machine Learning - 協助您做出更明智的決策、解決棘手問題並改善使用者成果。



Natural Language Understanding

精簡 • IBM

分析文字，以從內容中擷取概念、實體、情緒、關係、觀感等 meta 資料。



Personality Insights

精簡 • IBM

Watson Personality Insights 會從交易資料及社交媒體資料中衍生洞察力，以識別心理特質。



Speech to Text

精簡 • IBM

低延遲、多媒體串流標本



Text to Speech

精簡 • IBM

從文字合成自然聲調語音。



Tone Analyzer

精簡 • IBM

Tone Analyzer 可使用語言分析，從溝通中偵測下列三種語氣：情緒、社交及語言。此洞察之後可用來促進產生具有高度影響力的溝通。



Visual Recognition

精簡 • IBM

尋找視覺化內容中的意義！分析場景、物件、臉部及其他內容的影像。選擇現成的預設模型，或建立專屬的自訂分類器。開發智慧型應用程式...



Watson OpenScale

精簡 • IBM

IBM Watson OpenScale 是適用於 AI 融入式應用程式的企業級環境，可讓企業瞭解如何根據業務規模來建置、使用 AI，以及 AI 如何實現 ROI。



Watson Studio

精簡 • IBM

Embed AI and machine learning into your business. Create custom models using your own data.

建立 Visual Recognition 服務

> 可自定義服務名稱

服務名稱：

Visual Recognition-md

選取要在其中部署的地區/位置：

達拉斯

選取資源群組：

Default

建立

建立 Visual Recognition 服務

> 點選啟用工具

儀表板 / Visual Recognition-Scovin
資源群組: Default 位置: 達拉斯

开始使用服务。 套餐: Lite [升级](#)

启动工具 [入门教程](#) [API 参考](#)

凭证 [下载](#) [显示凭证](#)

API 密钥: [复制](#)

URL: [复制](#)

建立模型-範例資料

<https://cloud.ibm.com/apidocs/visual-recognition#create-a-classifier>

The screenshot shows the IBM Cloud API documentation for the 'Create a classifier' endpoint. The page is divided into several sections: Overview, Methods, and Request/Response details.

Visual Recognition

OVERVIEW

- Introduction
- Authentication
- Service endpoint
- Versioning
- Error handling
- Data handling
 - Data labels
 - Data collection
- Related information

METHODS

General

- Classify an image
- Classify images

Face

- Detect faces in an image
- Detect faces in images

Custom

- Create a classifier
- Retrieve a list of classifiers
- Retrieve classifier details
- Update a classifier

Create a classifier

Train a new multi-faceted classifier on the uploaded image data. Create your custom classifier with positive or negative examples. Include at least two sets of examples, either two positive example files or one positive and one negative file. You can upload a maximum of 256 MB per call.

Encode all names in UTF-8 if they contain non-ASCII characters (.zip and image file names, and classifier and class names). The service assumes UTF-8 encoding if it encounters non-ASCII characters.

Request

QUERY PARAMETERS

Parameter	Description
version * string	The release date of the version of the API you want to use. Specify dates in YYYY-MM-DD format. The current version is 2018-03-19.

FORM PARAMETERS

Parameter	Description
name * string	The name of the new classifier. Encode special characters in UTF-8.
{classname}_positive_examples * binary	A .zip file of images that depict the visual subject of a class in the new classifier. You can include more than one positive example file in a call. Specify the parameter name by appending <code>_positive_examples</code> to the class name. For example, <code>goldenretriever_positive_examples</code> creates the class <code>goldenretriever</code> .
negative_examples binary	A .zip file of images that do not depict the visual subject of any of the classes of the new classifier. Must contain a minimum of 10 images. Encode special characters in the file name in UTF-8.

Response

RESPONSE BODY

Example request

```
curl -X POST -u "apikey:apikey" -F "beagle_positive_examples=@beagle.zip" -F "goldenretriever_positive_examples=@golden-retriever.zip" -F "husky_positive_examples=@husky.zip" -F "negative_examples=@cats.zip" -F "name=dogs" "https://gateway.watsonplatform.net/visual-recognition/api/v3/classifiers?version=2018-03-19"
```

Download positive examples files [beagle.zip](#), [golden-retriever.zip](#), [husky.zip](#)

Download negative examples file [cats.zip](#)

Google "Visual Recognition - IBM Cloud API Docs"

建立模型

>點選Create Model 建立屬於自己的模型

The screenshot displays the IBM Watson Studio interface for the 'Visual Recognition : Visual Recognition-Scovin' service. The page includes a navigation bar with 'Services / Watson Services / Visual Recognition-Scovin' and an 'Upgrade' button. Below the service name, there are tabs for 'Overview' and 'Credentials'. The main content area features four panels:

- Classify Images**: Create custom, unique visual classifiers. Use the service to recognize custom visual concepts that are not available with general model. A red box highlights the 'Create Model +' button.
- Detect Objects**: Create custom, visual collections and identify objects within images using object coordinates. Labeled 'PRIVATE BETA'. A 'Request Access' button is visible.
- General**: Generate class keywords that describe the image. Use your own images, or extract relevant image URLs from publicly accessible webpages for analysis. A 'Test' button is visible.
- Faces**: Detect human faces in the image. This service also provides a general indication of age range and gender of faces. A 'Test' button is visible.

建立模型

> 進入剛剛新增的Visual recognition model頁面後右側瀏覽檔案選擇.zip之檔案 (匯入之檔案會上傳到cloud object storage)

The screenshot shows the IBM Watson Visual Recognition training interface for a 'Default Custom Model'. The page title is 'Default Custom Model' and the associated service is 'Visual Recognition-V7d'. A 'Train Model' button is visible. The interface is divided into two main sections: 'My Classes' and 'All Images'. The 'My Classes' section shows '1 class | 0 incomplete classes | 0 unclassified images' and a 'Total file size: 0.0/250 MB'. There are two options for creating a class: 'Create a class' (with a plus icon) and 'Negative (recommended)' (with a radio button and '0 images'). The 'Negative (recommended)' option includes a description: 'Use the negative class to train the model on images that do not depict the visual subject of any of the positive classes.' The right sidebar contains two steps: '1. Upload to project' with a 'Browse' button highlighted in a red box, and '2. Add from project'. Below the sidebar, it states '0 selected' and 'There are no .zip files in your project.'

建立模型

> 檔案匯入完成後會列在右下方

IBM Watson Studio Projects Tools Community Services Manage Support Docs

Projects / test_project / dogs

dogs

Associated Service : watson-vision-combined-bf

My classes (1) All images (0)

At least 2 classes required

Drag and drop files from your project.

Search classes

New training data size: 0.0/250 MB

1 class | 0 incomplete classes | 0 unclassified images

Use the negative class to train the model on images that do not depict the visual subject of any of the positive classes.

Negative (0)
This class is recommended but not required.

Create a class

1. Upload to project

To add files to your project, drop .jpeg, .png, or .zip files here or

Browse

2. Add from project

Drag .jpeg, .png, or .zip files from your project to the training area to add them to your model.

1 selected Add to model

- beagle.zip
14 Nov 2018, 4:15:39 pm
28.17 MB
- golden-retriever.zip
14 Nov 2018, 4:15:37 pm
27.48 MB
- husky.zip
14 Nov 2018, 4:15:36 pm
26.83 MB

建立模型

- > 分別將”beagle.zip“,” golden-retriever”, “husky”個別建立成為一個class
- > “cat.zip” 加入預設的Negative class

IBM Watson Studio Projects Tools Community Services Manage Support Docs 1737831 - YI-JEN HO'...

Projects / test_projct / dogs

4 classes | 0 incomplete classes | 0 unclassified images

New training data size: [85.0/250 MB](#)

Create a class

Beagle (50)

GoldenRetriever (...)

Husky (50)

Negative (50)

1. Upload to project

To add files to your project, drop .jpeg, .png, or .zip files here or

Browse

2. Add from project

Drag .jpeg, .png, or .zip files from your project to the training area to add them to your model.

0 selected

cats.zip
14 Nov 2018, 4:15:36 pm
8.01 MB

StopStartOff_Train.zip
19 Oct 2018, 12:20:40 pm
18.82 MB

TRCoff_Train.zip
19 Oct 2018, 12:20:19 pm

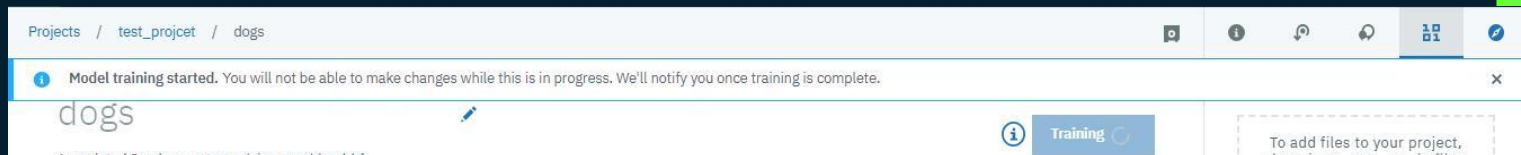
建立模型

> 當狀態顯示Model is ready to train，點擊Train Model 按鈕

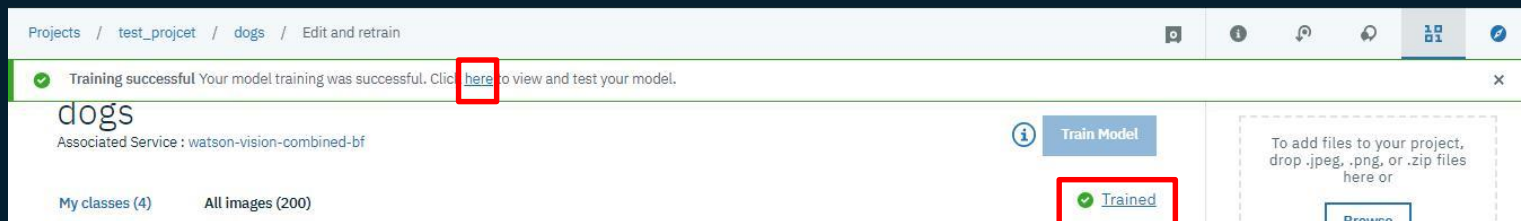
The screenshot shows the IBM Watson Visual Recognition interface for a project named "dogs". The breadcrumb navigation at the top reads "Projects / test_project / dogs". The main heading is "dogs" with a pencil icon for editing. Below it, the "Associated Service" is listed as "watson-vision-combined-bf". There are two tabs: "My classes (4)" and "All images (200)". A "Train Model" button is highlighted with a red box and an information icon. Below the button, it says "Ready to train" with a green checkmark. The main area contains a "Drag and drop files from your project." instruction and a search bar for classes. There are two class cards: "Beagle (50)" and "GoldenRetriever (...)", each with a grid of representative images. A "Create a class" button is also visible. On the right side, there is a sidebar with instructions: "1. Upload to project" (with a "Browse" button) and "2. Add from project". Below the instructions, it shows "0 selected" files in a list, including "cats.zip", "StopStartOff_Train.zip", and "TRCoff_Train.zip".

建立模型

> 等待資料訓練完成

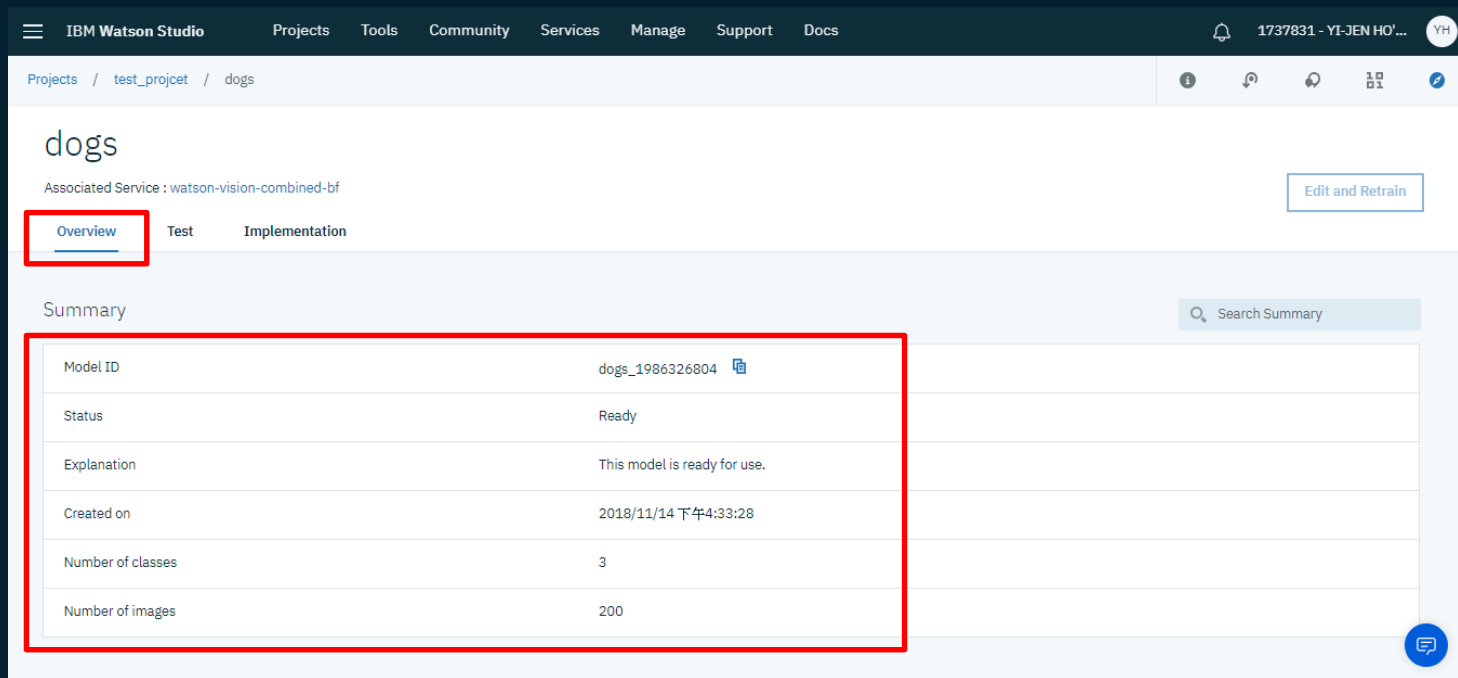


> 資料訓練完成點擊連結進入測試頁面



建立模型

> 當資料訓練完成後點擊連結會進入Overview頁面，在此頁面可以看到Model資訊



The screenshot shows the IBM Watson Studio interface. At the top, there is a navigation bar with 'IBM Watson Studio' and various menu items like 'Projects', 'Tools', 'Community', 'Services', 'Manage', 'Support', and 'Docs'. The user's name '1737831 - YI-JEN HO' is visible in the top right. Below the navigation bar, the breadcrumb path is 'Projects / test_projcet / dogs'. The main content area is titled 'dogs' and shows the 'Associated Service : watson-vision-combined-bf'. There are three tabs: 'Overview' (highlighted with a red box), 'Test', and 'Implementation'. An 'Edit and Retrain' button is located in the top right of the main content area. Below the tabs, there is a 'Summary' section with a search bar. A table with a red border contains the following information:

Model ID	dogs_1986326804
Status	Ready
Explanation	This model is ready for use.
Created on	2018/11/14 下午4:33:28
Number of classes	3
Number of images	200

建立模型

> 點選Test頁面可以將要測試的圖片拖曳至頁面上或是瀏覽檔案，畫面上會顯示分類結果

IBM Watson Studio Projects Tools Community Services Manage Support Docs 1737831 - YI-JEN HO'... YR

Projects / test_project / dogs

Associated Service : watson-vision-combined-bf

Overview **Test** Implementation

Filter

Threshold 0.0
0 — 1

Class
 Beagle
 GoldenRetriever
 Husky

test.jpg

GoldenRetriever	0.91
Beagle	0.00
Husky	0.00

maxresdefault.jpg

GoldenRetriever	0.05
Husky	0.02
Beagle	0.00



3. 重覆訓練模型

Make your model better!!

Retrain model

> 點選”Edit and Retrain”

The screenshot displays the IBM Watson Studio interface for a project named 'dogs'. The top navigation bar includes 'IBM Watson Studio', 'Projects', 'Tools', 'Community', 'Services', 'Manage', 'Support', and 'Docs'. The user's profile '1737831 - YI-JEN HO' is visible in the top right. The breadcrumb path is 'Projects / test_projcet / dogs'. The main content area shows the model name 'dogs' and its associated service 'watson-vision-combined-bf'. A red box highlights the 'Edit and Retrain' button. Below this, there are tabs for 'Overview', 'Test', and 'Implementation'. A 'Filter' section on the left includes a 'Threshold' slider set to 0.0 and a 'Class' label. The main area contains an icon of two overlapping documents and the instruction: 'Drop image files here to let the classifier analyze them or browse to select files.'

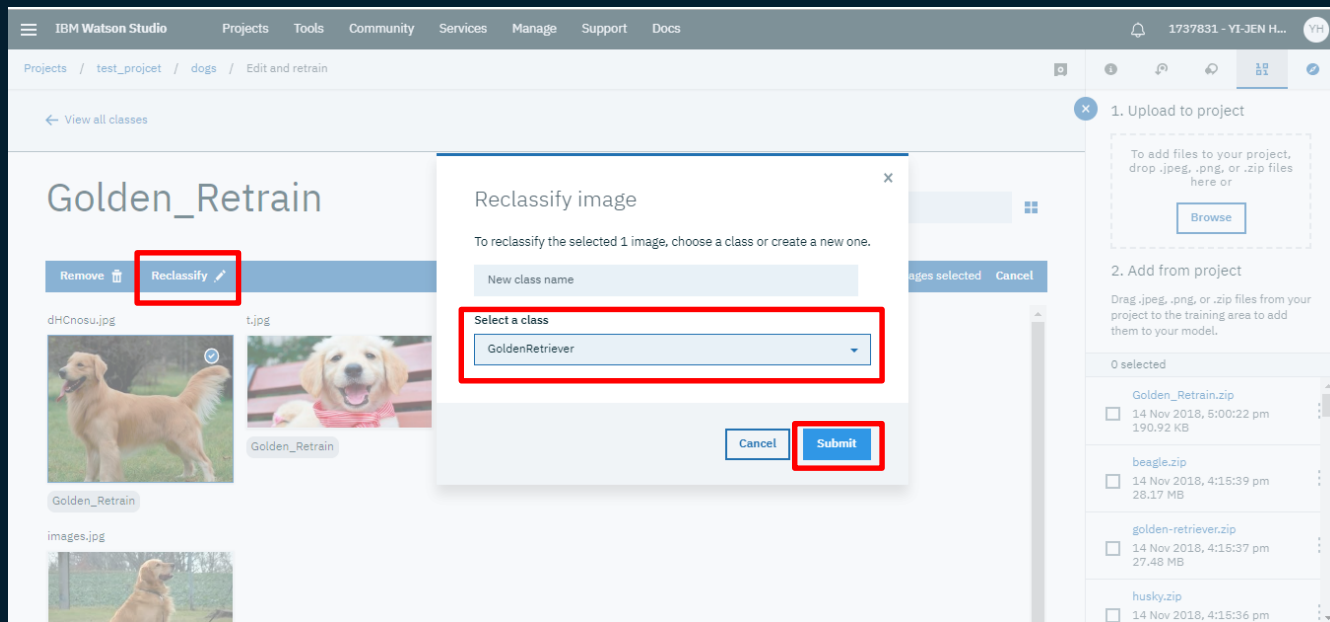
Retrain model

> 同前述步驟，匯入檔案並將檔案加入模型

The screenshot displays the IBM Watson Studio interface for a project named 'dogs'. The main area shows a list of classes: 'Create a class', 'Beagle (50)', 'Golden_Retrain (3)', and 'GoldenRetriever (...)'. The 'Golden_Retrain' class is highlighted with a red box and includes a red warning icon and the text 'Add 7 images to train this class.' Below the class list, there is a 'New training data size: 0.2/250 MB' indicator. On the right side, a sidebar contains a list of files for upload, including 'Golden_Retrain.zip', 'beagle.zip', and 'golden-retriever.zip'. The 'Golden_Retrain.zip' file is highlighted with a red box. Above this list, a red box highlights the '1. Upload to project' step, which includes a dashed box with the text 'To add files to your project, drop .jpeg, .png, or .zip files here or' and a 'Browse' button. The top navigation bar includes 'IBM Watson Studio', 'Projects', 'Tools', 'Community', 'Services', 'Manage', 'Support', and 'Docs'. The user's name '1737831 - YI-JEN H...' is visible in the top right corner.

Retrain model

- > 點選”Golden_Retrain”進入該類別
- > 選擇裡面的三張圖片
- > 選擇要加入的類別，這裡選擇 ”GoldenRetriever”



Retrain model

> 當狀態顯示Model is ready to train，點擊Train Model 按鈕

The screenshot displays the IBM Watson Visual Recognition interface for a project named 'dogs'. The breadcrumb path is 'Projects / test_project / dogs'. The main heading is 'dogs', with an associated service of 'watson-vision-combined-bf'. Below this, there are tabs for 'My classes (4)' and 'All images (200)'. A 'Train Model' button is highlighted with a red box, and a status indicator shows 'Ready to train'. The interface includes a search bar for classes and a list of classes: 'Beagle (50)' and 'GoldenRetriever (...)'. On the right side, there are instructions for uploading files to the project and adding them to the training area. A file list on the right shows 'cats.zip', 'StopStartOff_Train.zip', and 'TRCoff_Train.zip'.

參考資料

- > Watson Visual Recognition中自定分類器的最佳實踐：
<https://www.ibm.com/blogs/bluemix/2016/10/watson-visual-recognition-training-best-practices/>
- > 檔案上傳規範：<https://console.bluemix.net/docs/services/visual-recognition/customizing.html#->
- > 安裝教學：<https://dzone.com/articles/build-custom-visual-recognition-model-using-watson>
- > API參考：<https://console.bluemix.net/apidocs/visual-recognition>

