Serverless Image Recognition with Cloud Functions

This Code Lab demonstrates an IBM Cloud Function (based on Apache OpenWhisk) that gets an image from No-SQL Cloudant database and classifies it through Watson Visual Recognition. The use case demonstrates how actions work with data services and execute logic in response to Cloudant events.

One function, or action, is triggered by changes (in this use case, an upload of a document) in a Cloudant database. These documents are piped to another action that submits the image to Watson Visual recognition and upload a new document in Cloudant with the classifiers produced by Watson.

When you complete this Code Lab, you will understand how to:

* Create and deploy Cloud Functions
* Trigger Cloud Functions with Cloudant changes
* Use Watson Visual Recognition with Cloud Functions

Pre-requisites

1. IBM Cloud account. If you don’t have one, signup [here](https://console.bluemix.net/registration?cm_mmc=OSocial_Facebook-_-Developer_IBM+Developer-_-WW_IIS-_-DevDayfreetrial&cm_mmca1=000031SE&cm_mmca2=10008401).
2. Download Whisk Deploy (*wskdeploy*) from [releases page](https://github.com/apache/incubator-openwhisk-wskdeploy/releases). Extract the contents to a location and add the location of *wskdeploy* binary to your PATH environment variable.
3. Install [Node.js](https://nodejs.org/)

Steps

1. Clone the repo

From a terminal, run

$ git clone <https://github.com/IBM/serverless-image-recognition>

1. Create IBM Cloud Services
2. Cloudant database
3. From the IBM Cloud Dashboard, click on *Create resource* on top right corner. It will take you to the Catalog section.

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1. Click on Databases from left hand side menu. Click on Cloudant.

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1. Leave the Service name with its default value or choose a name that is unique
2. Select the Region / Location. All new Cloud registrations from India are mapped to London. To know your Cloud account data centre, follow the steps – e, f & g below. Otherwise, skip to h.
3. From your Cloud Dashboard, click on Manage -> Account -> Cloud Foundry orgs

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1. Click on your Cloud Foundry Organisation, which is nothing but your Cloud login / email id.

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1. Your Region is shown against your Cloud Foundry Space

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1. Choose *“Use both legacy credentials and IAM”* for the Available authentication methods option
2. Leave the resource group to Default
3. Click on *Create* at the bottom right corner

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1. Click on the Cloudant service from your Dashboard

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1. Click on *Service credentials* from left hand side menu
2. Click on *New credential*. Leave the default values for all the fields in the pop-up window. Click on *Add*.

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1. Click on *View credentials*. Copy the values of "username" & "password" and paste them as values of CLOUDANT\_USERNAME and CLOUDANT\_PASSWORD respectively, in **local.env** file.

**Note:** Copy the values without quotes

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1. Click on *Manage* from left hand side menu. Click on *Launch Cloudant Dashboard.*

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1. This will launch the Cloudant database web console. Click on *Create Database* at the top right corner and create a database called **images**.

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1. Create one more database called **tags**
2. Visual Recognition service
3. From the Catalog section, click on AI from left hand side menu. Select Visual Recognition service.

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1. Leave the Service name with its default value or choose a name that is unique
2. Region / Location is set to Dallas by default and cannot be changed
3. Leave the resource group to Default
4. Click on *Create* at the bottom right corner
5. Click on the Visual Recognition service from your Dashboard
6. Click on *Service credentials* from left hand side menu
7. Click on *New credential*. Leave the default values for all the fields in the pop-up window. Click on *Add.*
8. Click on *View credentials*. Copy the values of "apikey" and paste them as a value of WATSON\_VISUAL\_APIKEY in **local.env** file.

**Note:** Copy the value without quotes

1. From Cloud Dashboard, click on Functions from collapsible left hand side menu

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1. Click on Getting Started -> API Key
2. Copy Namespace, Host and Key

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1. Deploy Cloud Functions using *wskdeploy*

This uses the manifest.yaml file. Go to the root folder of your project. Run,

$ source local.env

$ wskdeploy --apihost <Host> --auth <API Key> --namespace <Namespace>

For e.g.,

*wskdeploy --apihost* eu-gb.functions.cloud.ibm.com *--auth* a493052a-f079-423d-bc93-36d7dc64cdce:LxRdzkn6WupVe8QlpkpygmA5cIX7uKwyfbxCfSgkIseG10gGDV0e36pHTyJBhKgS *--namespace* chubbychellam18@yahoo.com\_dev

1. From Functions home page, click on Actions and then Triggers to see the deployed actions and triggers

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1. Launch the Application

* Modify the lines for Cloudant credentials in *web/scripts/upload.js*

let usernameCloudant = "YOUR\_CLOUDANT\_USERNAME"

let passwordCloudant = "YOUR\_CLOUDANT\_PASSWORD"

* Run

$ npm install

$ npm start

* Upload an image file and see the results

Sample Output

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