IMAGE RECOGNITION WITH IBM CLOUD VISUAL RECOGNITION

Problem Statement:

1.Image processing can be broadly defined as the manipulation of signals which are inherently multidimensional.
2.The most common such signals are photographs and video sequences.
3.The goals of processing or manipulation can be (i) compression for storage or transmission; (ii) enhancement or restoration; (iii) analysis, recognition, and understanding; or (iv) visualization for human observers.

Problem Definition:

The project involves creating an image recognition system using IBM Cloud Visual Recognition. The goal is to develop a platform where users can upload images, and the system accurately classifies and describes the image contents. This will enable users to craft engaging visual stories with the help of AI-generated captivating visuals and compelling narratives.

In today's digital age, businesses and organizations face the challenge of efficiently categorizing and extracting valuable insights from vast amounts of visual data, including images and videos. Traditional manual methods for image analysis are time-consuming, error-prone, and not scalable. To address this problem, we aim to leverage IBM Cloud Visual Recognition to develop an automated and accurate image classification and analysis system. This system will enable us to identify objects, detect anomalies, and gain valuable insights from visual data, ultimately improving decision-making processes and operational efficiency."

Use case definition:

Image recognition is used to perform many machine-based visual tasks, such as labeling the content of images with meta tags, performing image content search and guiding autonomous robots, self-driving cars and accident-avoidance systems.
Example:

Facial recognition. Facial recognition is used in a variety of contexts -- social media,security systems and entertainment -- and frequently involves identifying faces in photos and videos. For example, when someone uploads a photo of their friends on Facebook, the app instantly suggests the friends whom it believes are in that photo. Deep learning algorithms are used in facial recognition to evaluate a photo of a person and produce the accurate identity of the individual in the image. The algorithm can be expanded to extract important attributes such as age, gender and facial expressions of a person through their image. The facial recognition feature on smart phones, as well as computerized picture identity verification at security checkpoints such as airports or

*building entrances, are most common applications of image recognition***.**

Design Thinking:

Image recognition with IBM Cloud Visual Recognition typically involves the following steps:

1.Set Up an IBM Cloud Account:

If you don't already have one, create an IBM Cloud account and log in.

2.Create an Instance of Visual Recognition Service:

In your IBM Cloud dashboard, create an instance of the Visual Recognition service.

3.Get API Credentials:

Once your service instance is created, you'll receive API credentials (an API key and URL) that you will use to authenticate your requests.

4.Collect and Prepare Images:

Gather the images you want to analyze. Make sure they are in a suitable format (e.g., JPEG, PNG) and meet any size or quality requirements.

5. Train a Custom Model:

If you need to recognize specific objects or classes, you can train a custom model using your image dataset. This step is optional but can improve recognition accuracy for specific use cases.

6. Use the API:

Depending on your needs, you can use the API for various purposes:

- Classify Images: Submit images to the API for classification. The API will return labels or tags describing the objects or scenes in the image.

- Detect Faces: You can also use the API to detect faces in images, along with attributes like age, gender, and emotion.

- Train and Re-Train Models: If you're using custom models, you may need to periodically re-train them with new data to improve accuracy.

7. Handle API Responses:

Parse the API responses to extract the information you need for your application.

8. Integrate with Your Application:

Incorporate the image recognition capabilities into your application or service using the API credentials and the appropriate API endpoints.

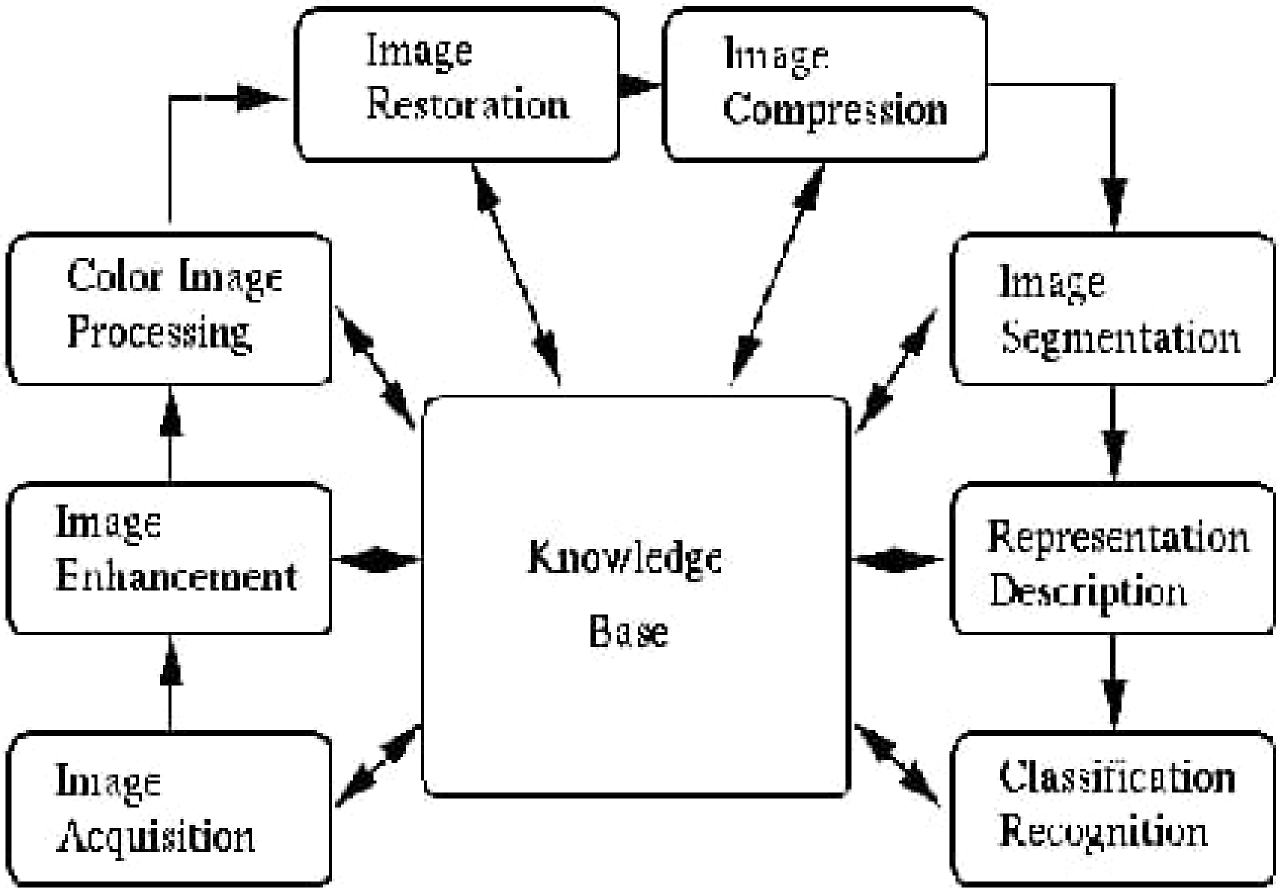
9. Test and Iterate: Test your integration thoroughly and fine-tune your application as needed to achieve the desired recognition accuracy and performance.

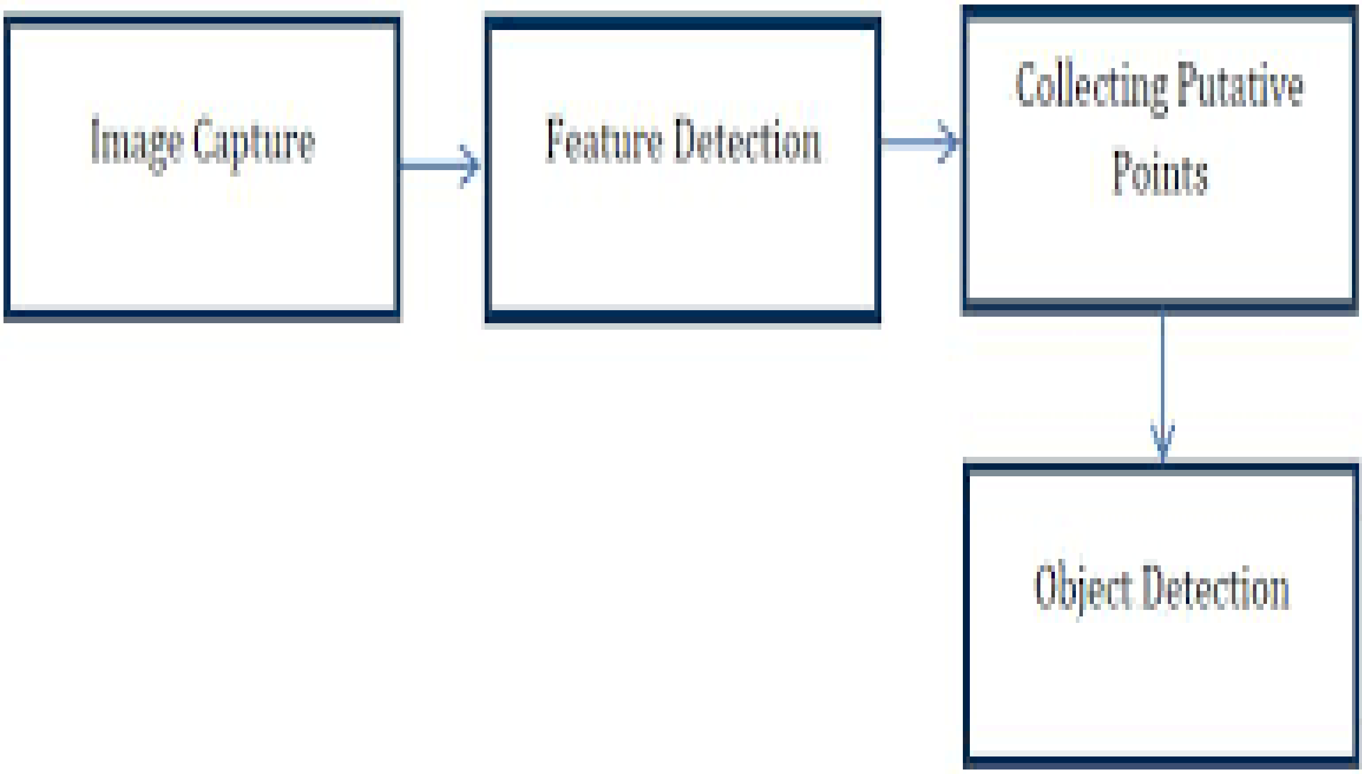
10. Monitor and Maintain:

Regularly monitor the performance of your image recognition system. If you're using a custom model, consider re-training it periodically to adapt to changing data and improve accuracy.

11. Manage Costs:

Be mindful of the pricing structure for IBM Cloud Vision Recognition, as usage can incur costs based on the number of API calls and features used.





INNOVATIVES:

ENHANCING IMAGE RECOGNITION WITH SENTIMENT ANALYSIS:

INTRODUCTION:

Image sentiment analysis is a high-level abstraction concerning the affects to be conveyed by an image, and could bridge the big affective gap between low-level visual features and high-level sentiment.Technically, to capture subtle visual contrast among multi-scale feature maps, a multi-scale Fully Convolutional Network (FCN) is employed to generate the saliency map . As such, it is natural to optimize the whole architecture by simultaneously minimizing the classification loss of image sentiment and the distance between the learnt attention distribution and saliency map.During prediction, the image representations weighted by the attention are input into a fully-connected layer for image sentiment classification.

INNOVATIVE COMPONENTS

IBM Cloud Visual Recognition offers a range of innovative components and features that set it apart in the field of image recognition. These components leverage advanced AI and machine learning technologies to enhance the accuracy, versatility, and usability of the platform. Here are some of the innovative components of IBM Cloud Visual Recognition

1. Custom Object Recognition:

One innovative component is the ability to create custom object recognition models. This enables users to train the system to recognize specific objects or categories relevant to their domain. This customization is crucial for industries with unique recognition needs, such as manufacturing, healthcare, and agriculture.

2. Real-time Processing:

The support for real-time image recognition is another innovative component. It allows for immediate analysis and response, making the system suitable for applications like security monitoring, autonomous vehicles, and augmented reality experiences.

3. Transfer Learning:

Transfer learning, used in many modern image recognition models, is innovative in the sense that it allows developers to start with pre-trained models and fine-tune them for their specific tasks. This reduces the need for large custom datasets and accelerates model development.

4. Data Augmentation:

Data augmentation techniques, which artificially create variations in training data, enhance the model's robustness and improve recognition accuracy. By generating new training examples from existing data, this component helps address issues related to variations in lighting, perspective, and more.

5. Cloud-Based Service:

The cloud-based nature of IBM Cloud Visual Recognition is innovative in itself. It eliminates the need for extensive on-premises infrastructure and provides scalable, on-demand access to image recognition capabilities. This cloud-based approach is cost-effective and allows for flexible usage.

6. Integration with Other IBM Services:

IBM Cloud Visual Recognition can be seamlessly integrated with other IBM Cloud services, fostering innovation in areas such as data analytics, machine learning, and IoT. These integrations open up new possibilities for data-driven insights and automation.

7.Usability and Customization:

The platform's user-friendly interface for creating and managing custom models encourages innovation. Users can adapt the system to their unique requirements without requiring extensive AI expertise.

8. Feedback Loops:

Implementing feedback mechanisms that allow users to correct and improve recognition results is innovative. It supports the continuous learning and adaptation of the model, making it more effective over time.

9. Ethical AI and Bias Mitigation:

Addressing ethical concerns and mitigating biases in recognition is a significant innovation. IBM Cloud Visual Recognition provides tools for fairness and bias detection, promoting responsible and unbiased AI development.

10. Multi-Modal Recognition:

Beyond static images, the ability to perform multi-modal recognition (combining images with other data types like text or audio) is innovative. This extends the applicability of image recognition to more complex use cases.

11. Hybrid Deployments:

IBM Cloud supports hybrid cloud deployments, allowing organizations to innovate by integrating image recognition with their on-premises infrastructure, ensuring data security and compliance.

12. Edge Computing Integration:

The ability to deploy image recognition models to edge devices is an innovative component. This enables real-time recognition without relying on constant cloud connectivity, suitable for applications like smart cameras and IoT devices.

These innovative components make IBM Cloud Visual Recognition a versatile and powerful tool for a wide range of industries and applications, from enhancing customer experiences to improving operational efficiency and security. Organizations can leverage these features to develop cutting-edge solutions that leverage the capabilities of AI-powered image recognition.

CONCLUSION:

In conclusion, IBM Cloud Visual Recognition provides a comprehensive set of tools and features, including pre-trained models for common objects, customization options for domain-specific recognition, and the flexibility to process images in real-time or batch mode.

Captivate makes storytelling with images easy. It recognizes your photos and adds captivating captions, helping you connect with your audience effortlessly.

It can effectively transform the design of incorporating sentiment analysis into a fully functional and innovative image recognition system that enhances user's storytelling abilities and engages their audience on a deeper emotional level.

Development of project

INTRODUCTION:

Creating an image recognition system using IBM Cloud Visual Recognition is a powerful way to harness the capabilities of artificial intelligence.To get started, create an IBM Cloud account, set up the Visual Recognition service, and obtain the necessary API keys. Additionally, design a straightforward web interface that allows users to upload images and receive AI-generated captions, making the application more interactive and user-friendly.

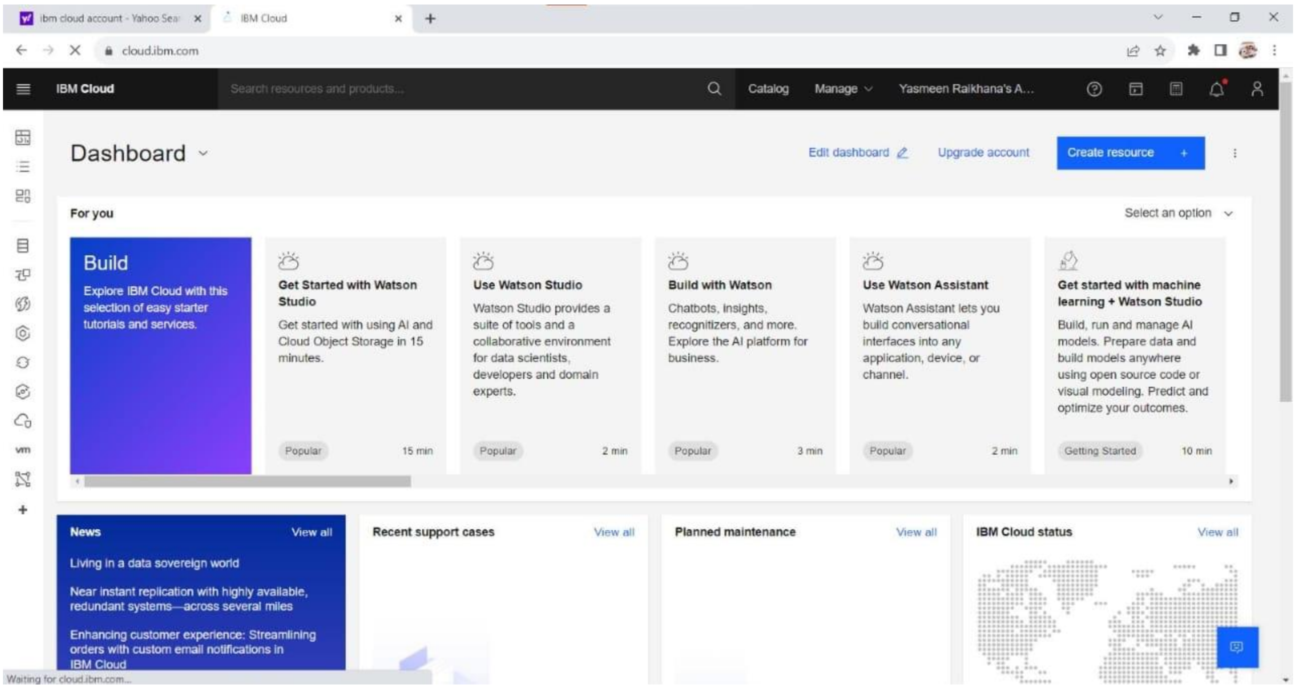
IBM Cloud Account:

Create an IBM Cloud Account, and creating login with the IBMid.

And click continue.

Enter your password, then click login.

The homepage of IBM Cloud will be



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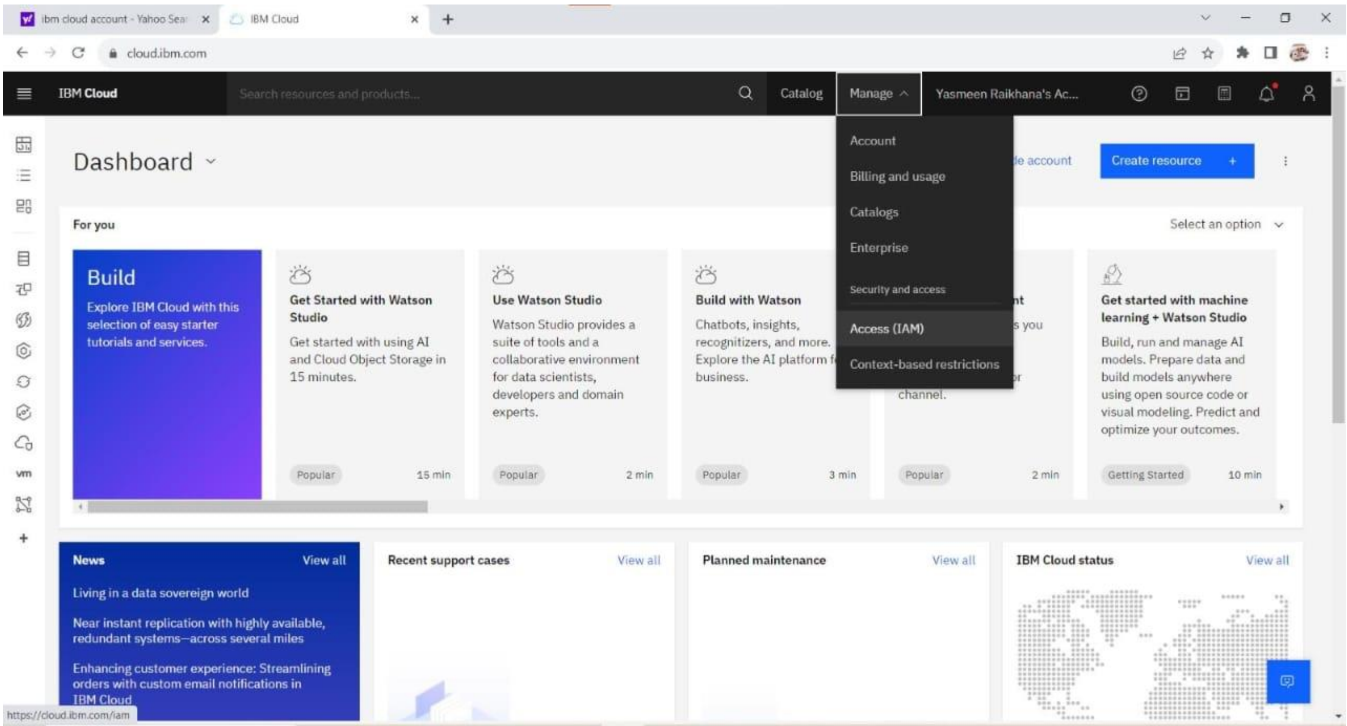
Set up the Visual Recognition service:

In the homepage of the IBM account,Click on the manage.



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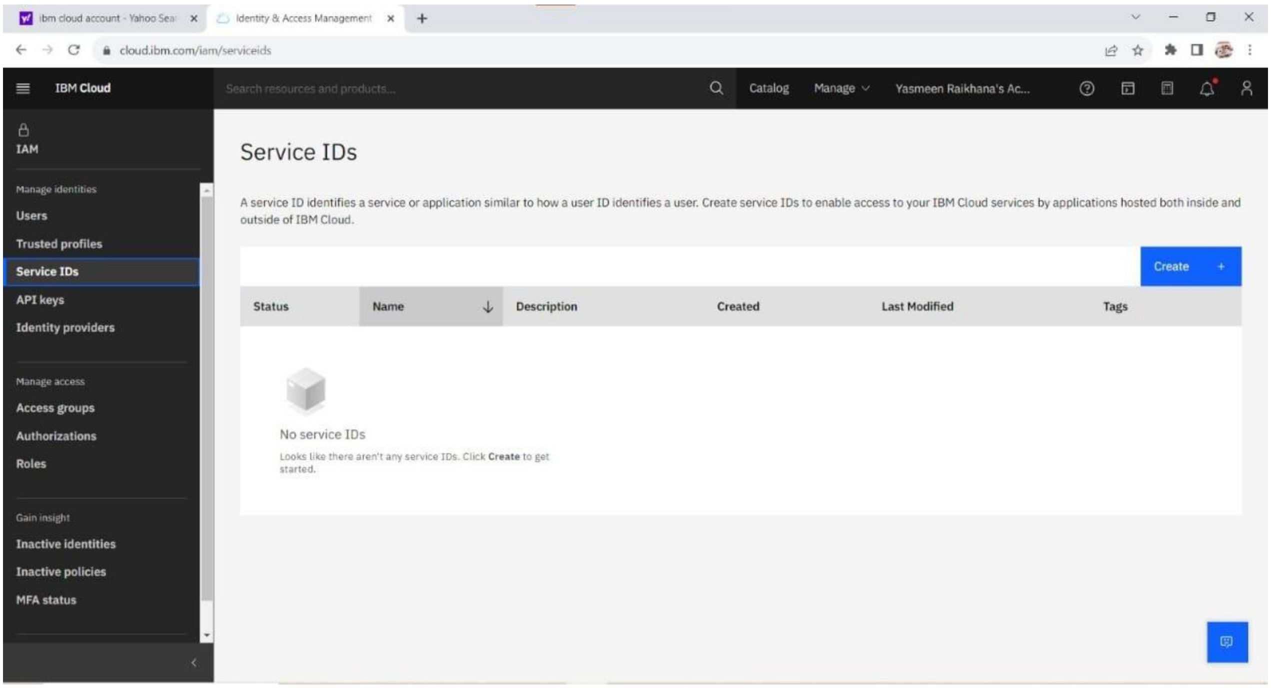
Click on the Access(IAM).Then click on the Service IDs.



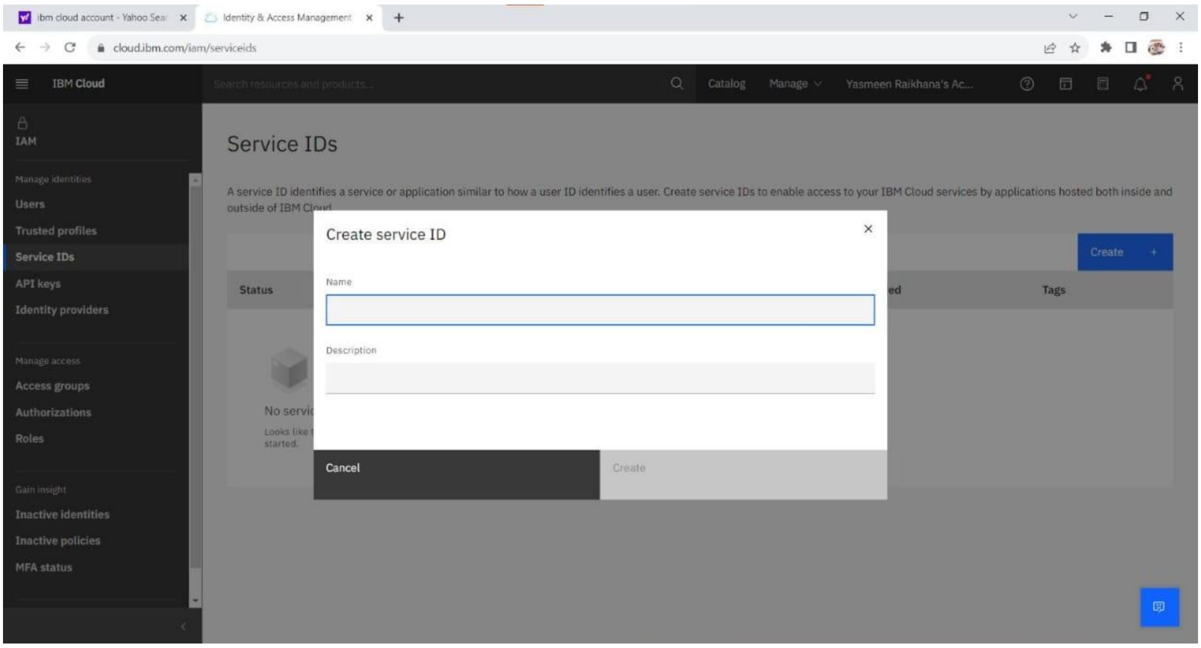
Service IDs

A service ID identifies a service or application similar to how a user ID identifies a user. Create service IDs to enable access to your IBM Cloud services by applications hosted both inside and outside of IBM Cloud.

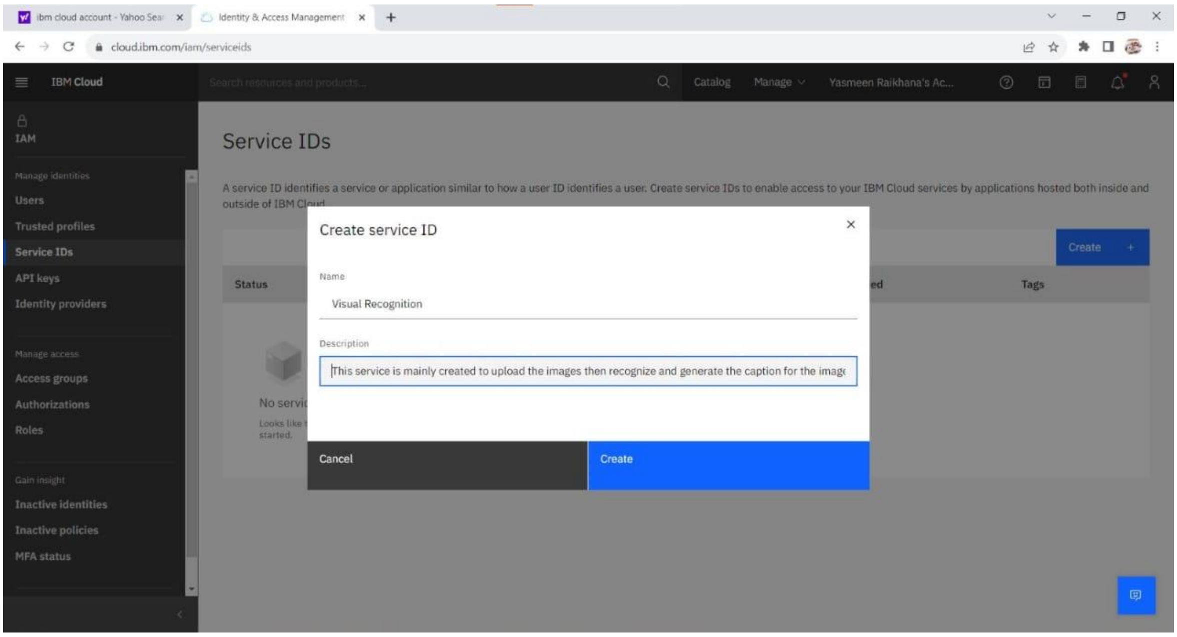
No service IDs

Looks like there aren't any service IDs. Click **Create** to get started.

In this Click on Create button, for creation of service.



Enter the name as visual recognition and the description for the service, then click on Create button to create the service.



Service IDs

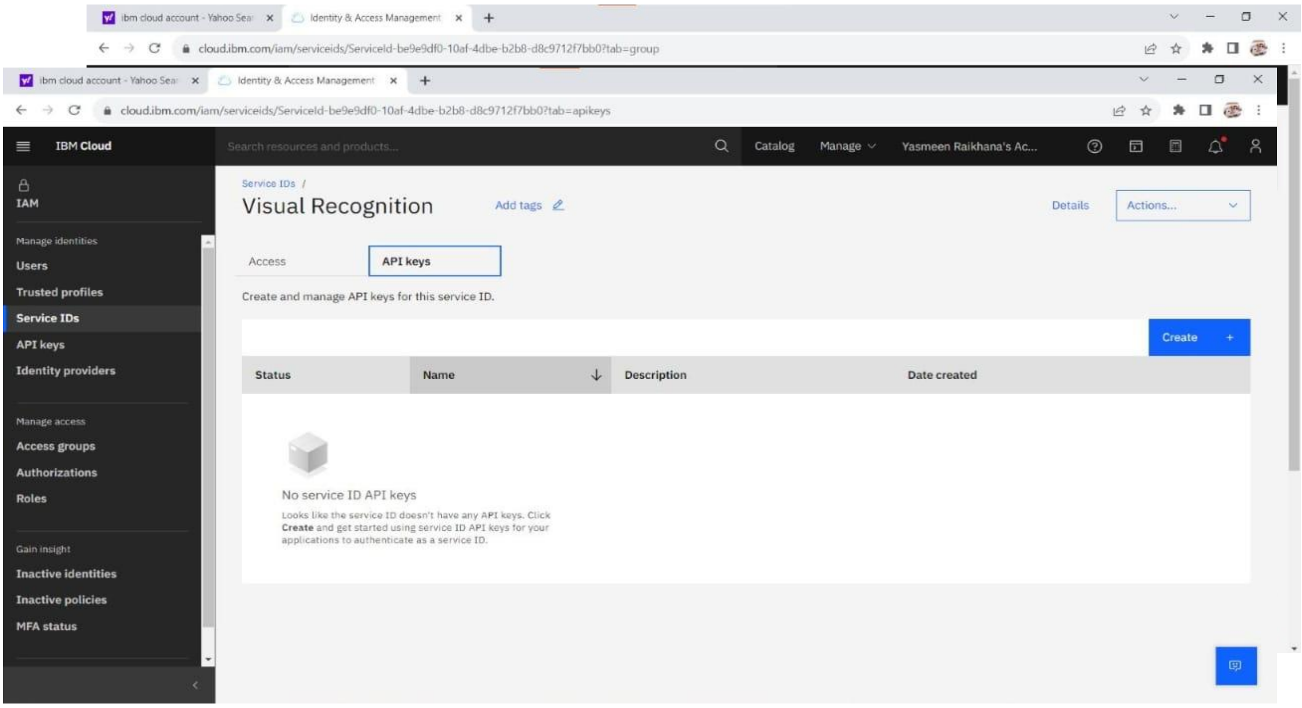
A service ID identifies a service or application similar to how a user ID identifies a user. Create service IDs to enable access to your IBM Cloud services by applications hosted both inside and outside of IBM Cloud.

Create service ID

Name: Visual Recognition

Description: This service is mainly created to upload the images then recognize and generate the caption for the image

Click the create button and then Visual Recognition service has been created.



Visual Recognition

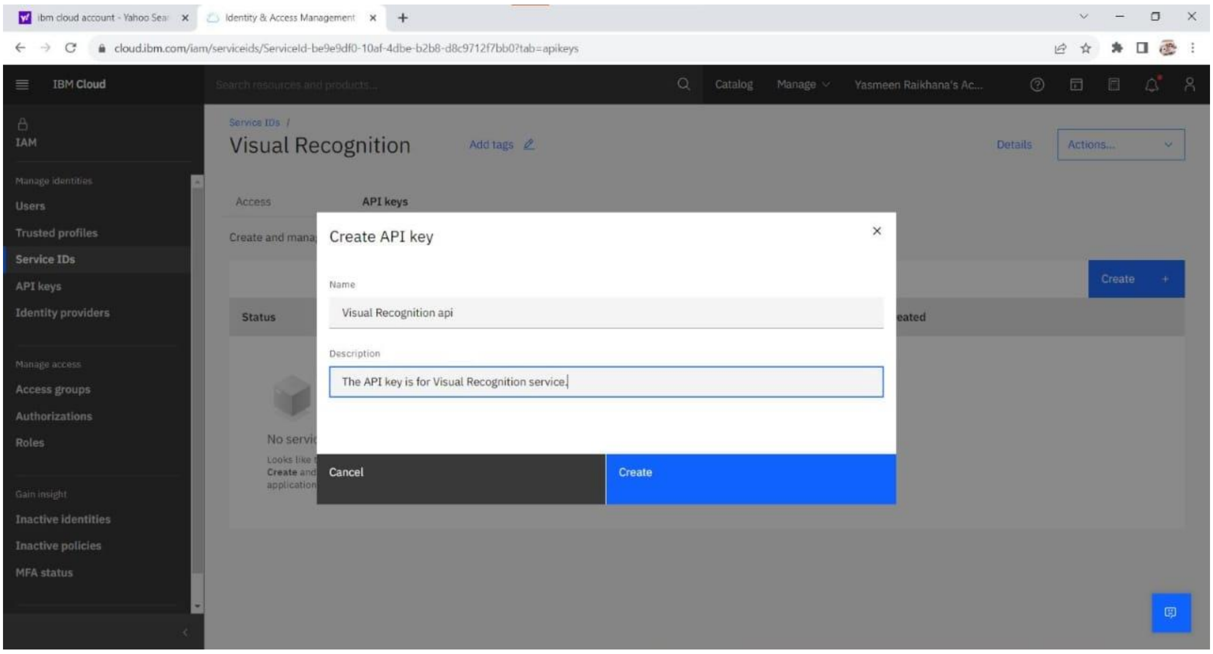
Create and manage API keys for this service ID.

Status	Name	Description	Date created

No service ID API keys

Looks like the service ID doesn't have any API keys. Click **Create** and get started using service ID API keys for your applications to authenticate as a service ID.

Click on the API keys, to obtain the API key for the Visual Recognition Service.



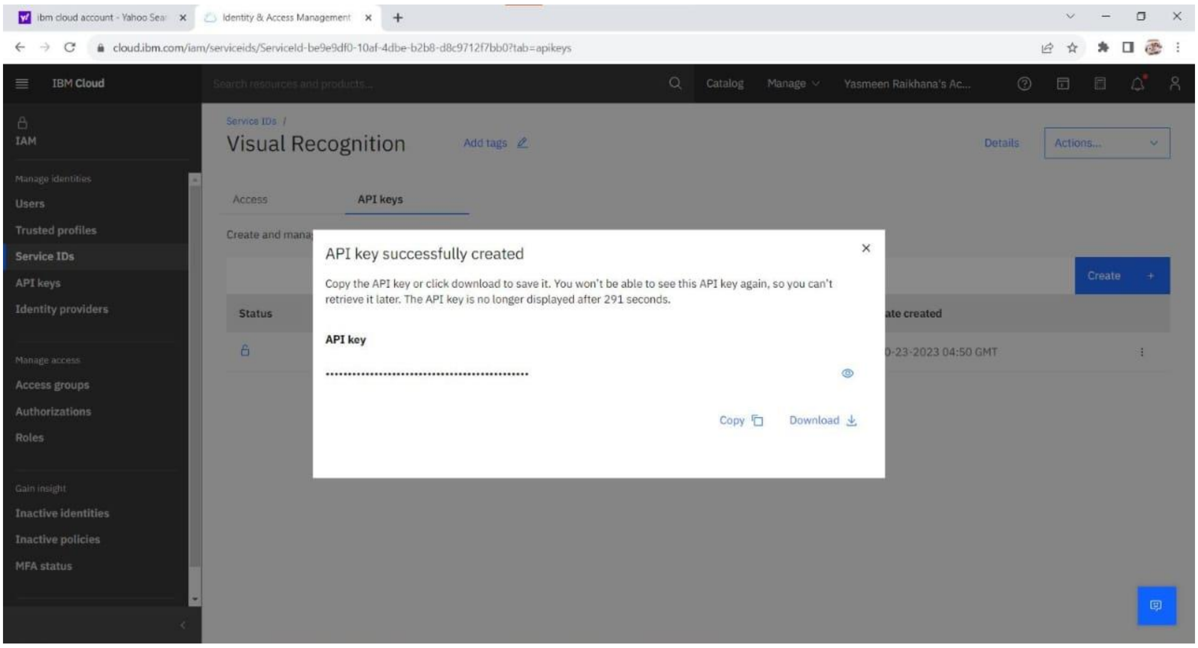
Create API key

Name: Visual Recognition api

Description: The API key is for Visual Recognition service.

Click the create button.Then enter the name and the description to create the API key and click on the Create button.

The API key has been successfully created for the Visual Recognition Service.



API key successfully created

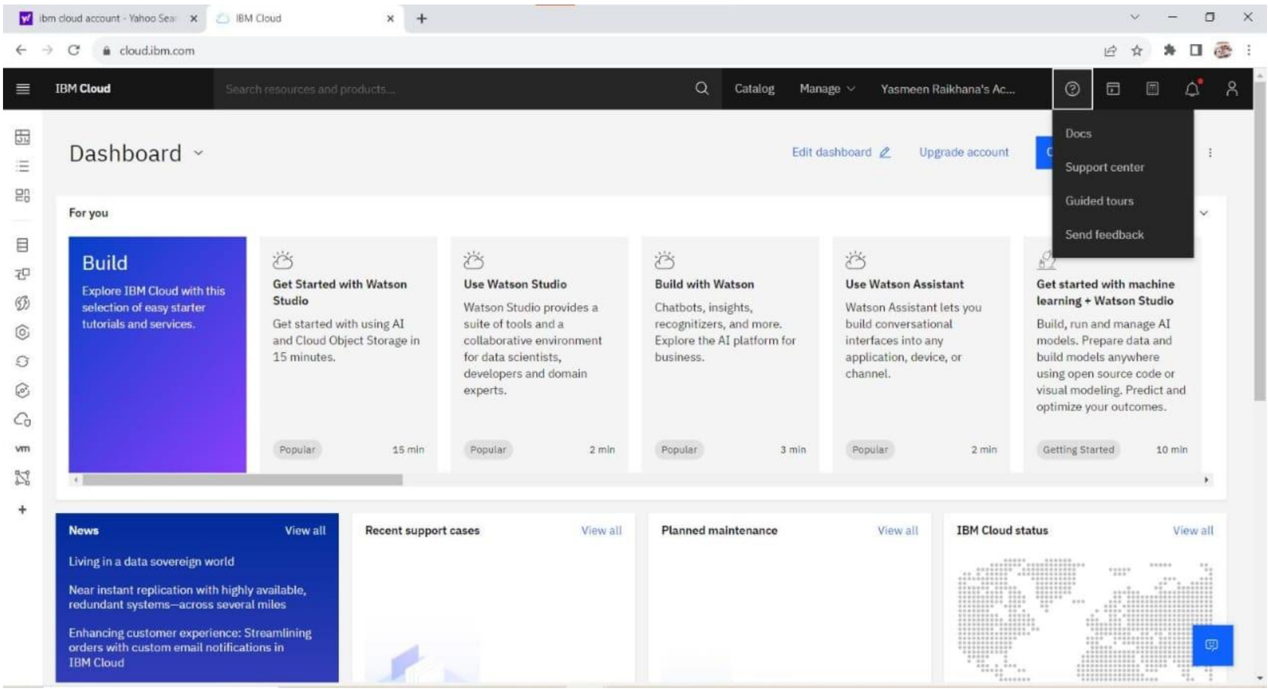
Copy the API key or click download to save it. You won't be able to see this API key again, so you can't retrieve it later. The API key is no longer displayed after 291 seconds.

API key: •••

The API key has obtained.

Visual Recognition Service document.

Open the home page of your IBM account, click on the help.



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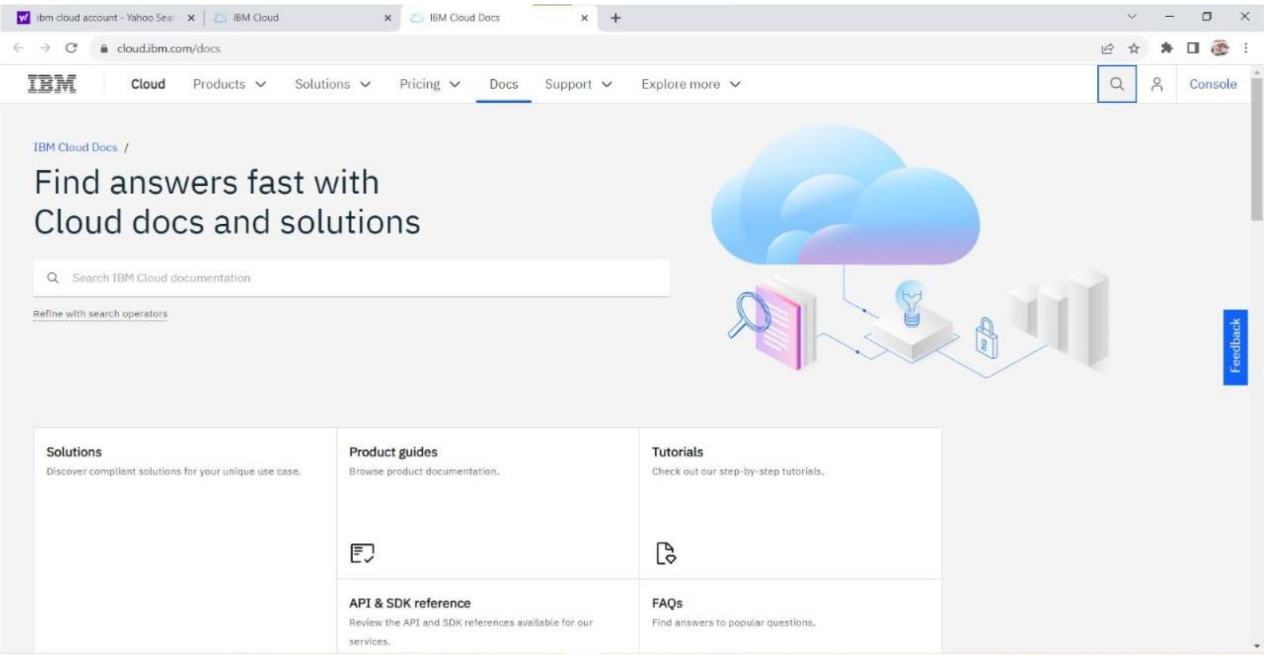
click on the docs then Click on the search button at the drop-down menu, near the user account.



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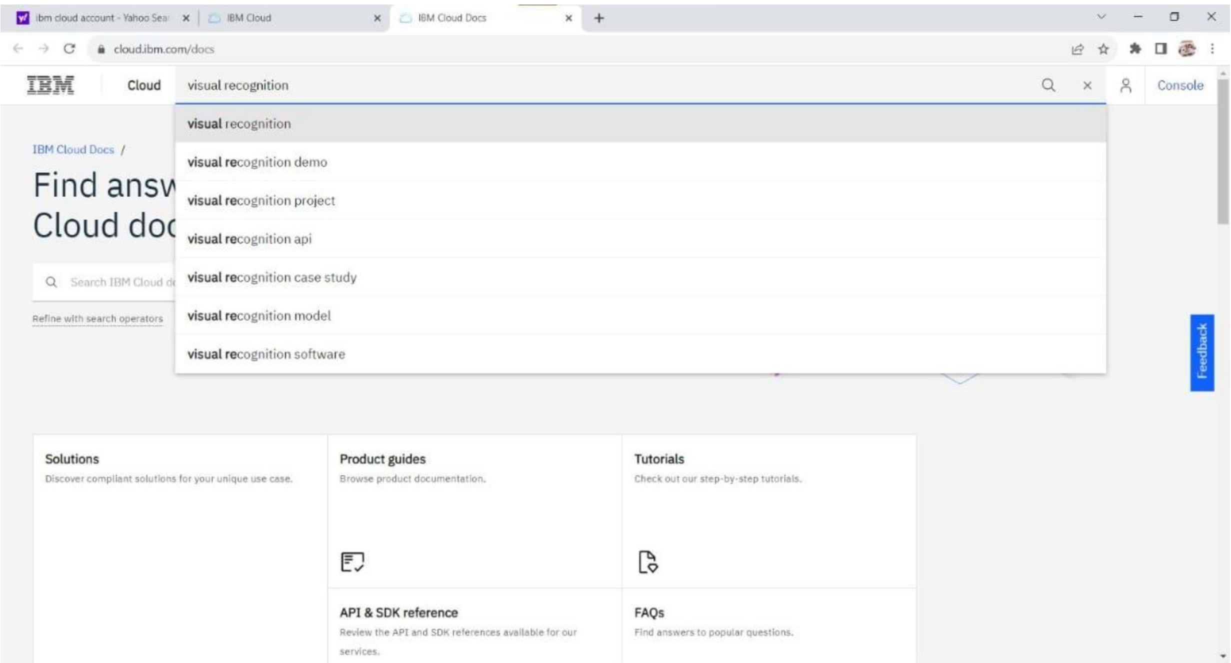

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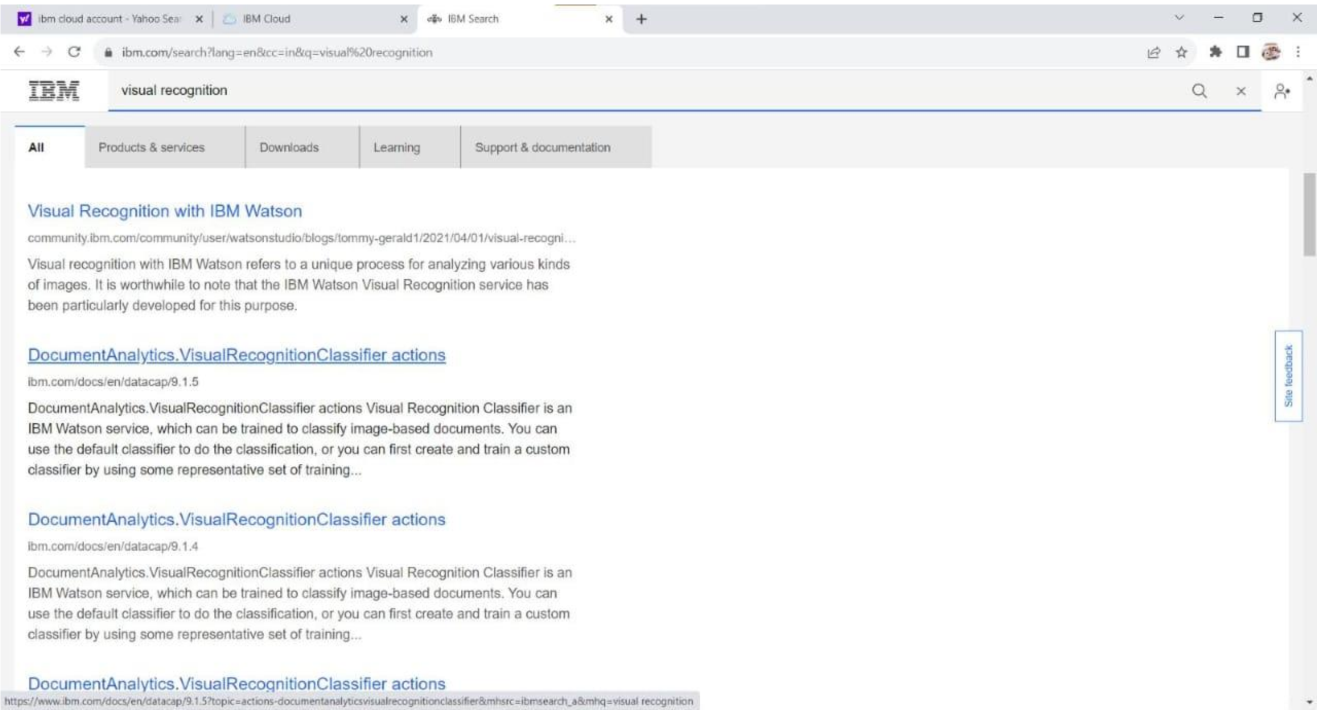
Open the DocumentAnalytics.VisualRecognitionClassifier actions



visual recognition

Visual Recognition with IBM Watson
community.ibm.com/community/user/watsonstudio/blogs/tommy-gerald1/2021/04/01/visual-recogni...
Visual recognition with IBM Watson refers to a unique process for analyzing various kinds of images. It is worthwhile to note that the IBM Watson Visual Recognition service has been particularly developed for this purpose.

DocumentAnalytics.VisualRecognitionClassifier actions
ibm.com/docs/en/datacap/9.1.5
DocumentAnalytics.VisualRecognitionClassifier actions Visual Recognition Classifier is an IBM Watson service, which can be trained to classify image-based documents. You can use the default classifier to do the classification, or you can first create and train a custom classifier by using some representative set of training...

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DocumentAnalytics.VisualRecognitionClassifier actions

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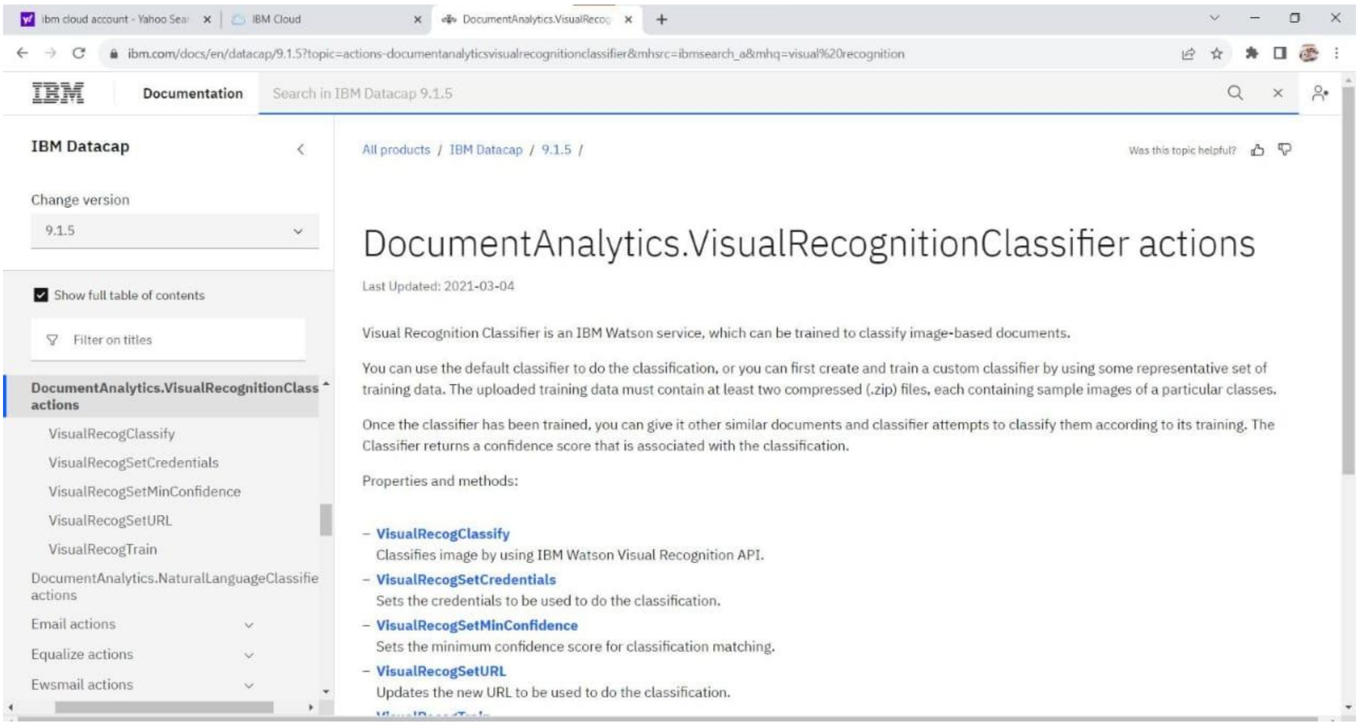
The main page will be as follows.



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DocumentAnalytics.VisualRecognitionClassifier actions

Last Updated: 2021-03-04

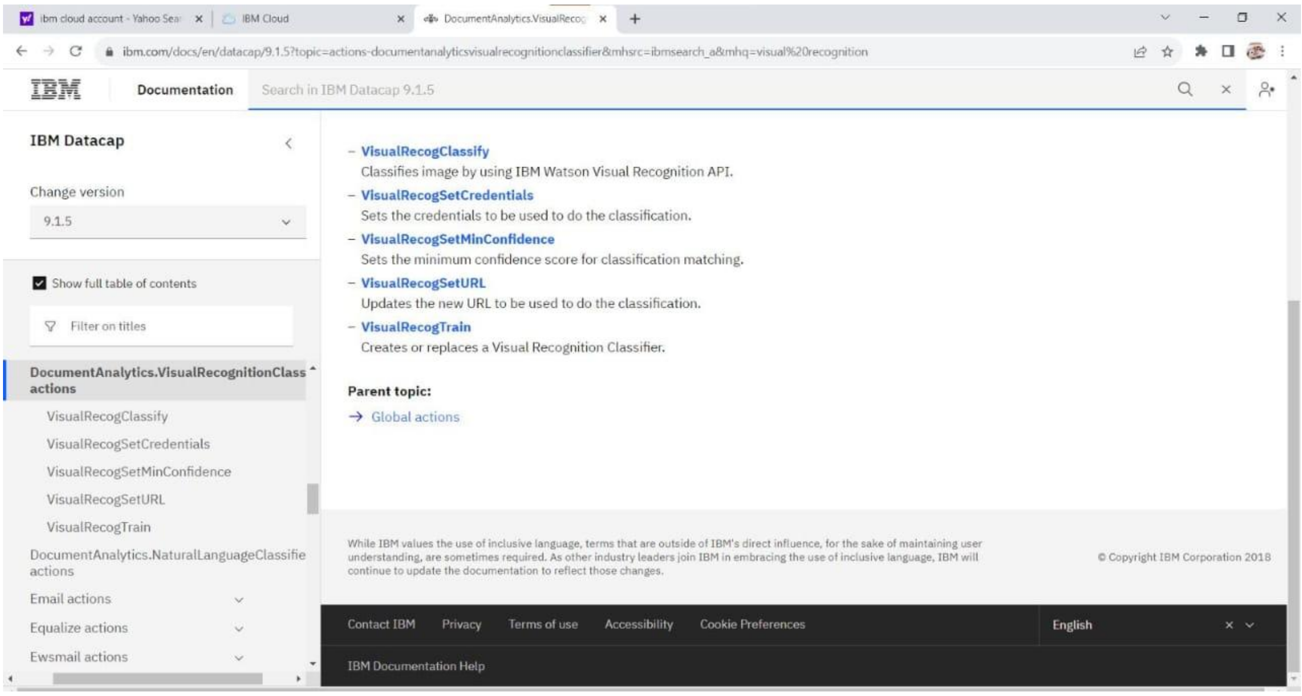
Visual Recognition Classifier is an IBM Watson service, which can be trained to classify image-based documents.

You can use the default classifier to do the classification, or you can first create and train a custom classifier by using some representative set of training data. The uploaded training data must contain at least two compressed (.zip) files, each containing sample images of a particular classes.

Once the classifier has been trained, you can give it other similar documents and classifier attempts to classify them according to its training. The Classifier returns a confidence score that is associated with the classification.

Properties and methods:

- **VisualRecogClassify**
  Classifies image by using IBM Watson Visual Recognition API.
- **VisualRecogSetCredentials**
  Sets the credentials to be used to do the classification.
- **VisualRecogSetMinConfidence**
  Sets the minimum confidence score for classification matching.
- **VisualRecogSetURL**
  Updates the new URL to be used to do the classification.



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  Sets the minimum confidence score for classification matching.
- **VisualRecogSetURL**
  Updates the new URL to be used to do the classification.

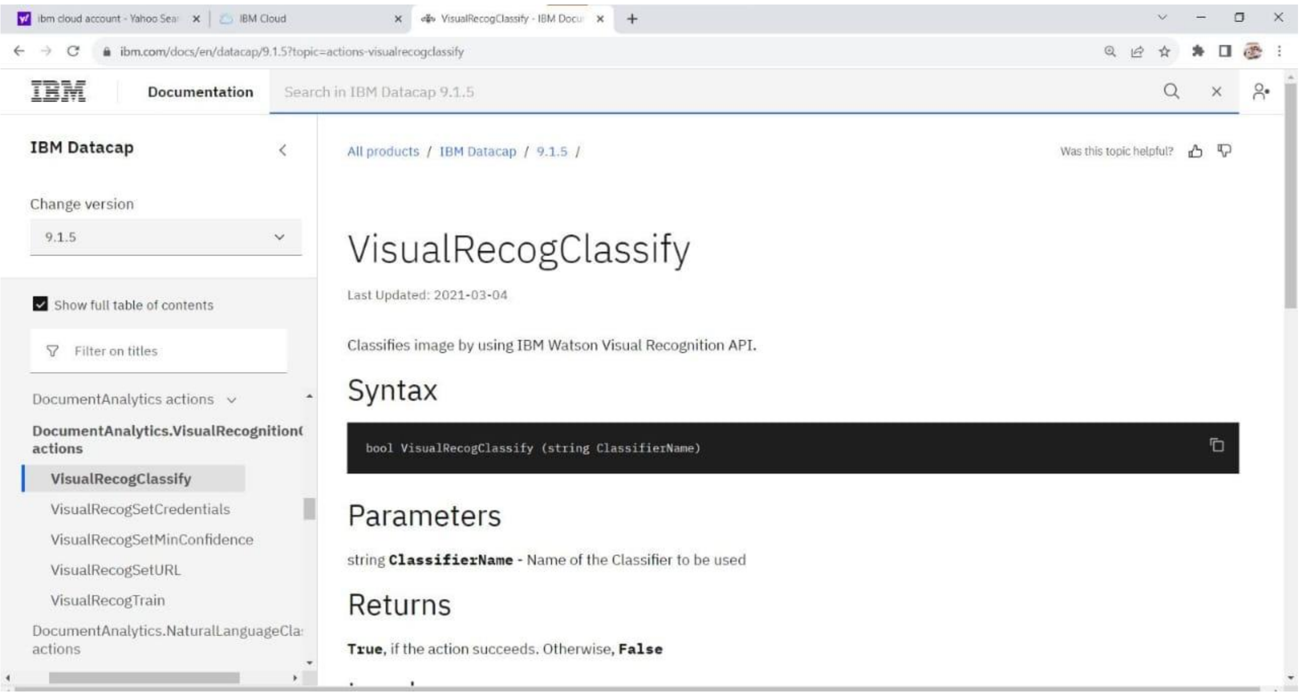
- **VisualRecogTrain**
  Creates or replaces a Visual Recognition Classifier.

Parent topic:

→ Global actions

While IBM values the use of inclusive language, terms that are outside of IBM's direct influence, for the sake of maintaining user understanding, are sometimes required. As other industry leaders join IBM in embracing the use of inclusive language, IBM will continue to update the documentation to reflect those changes.

This is VisualRecogClassify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Was this topic helpful?

VisualRecogClassify

Last Updated: 2021-03-04

Classifies image by using IBM Watson Visual Recognition API.

Syntax

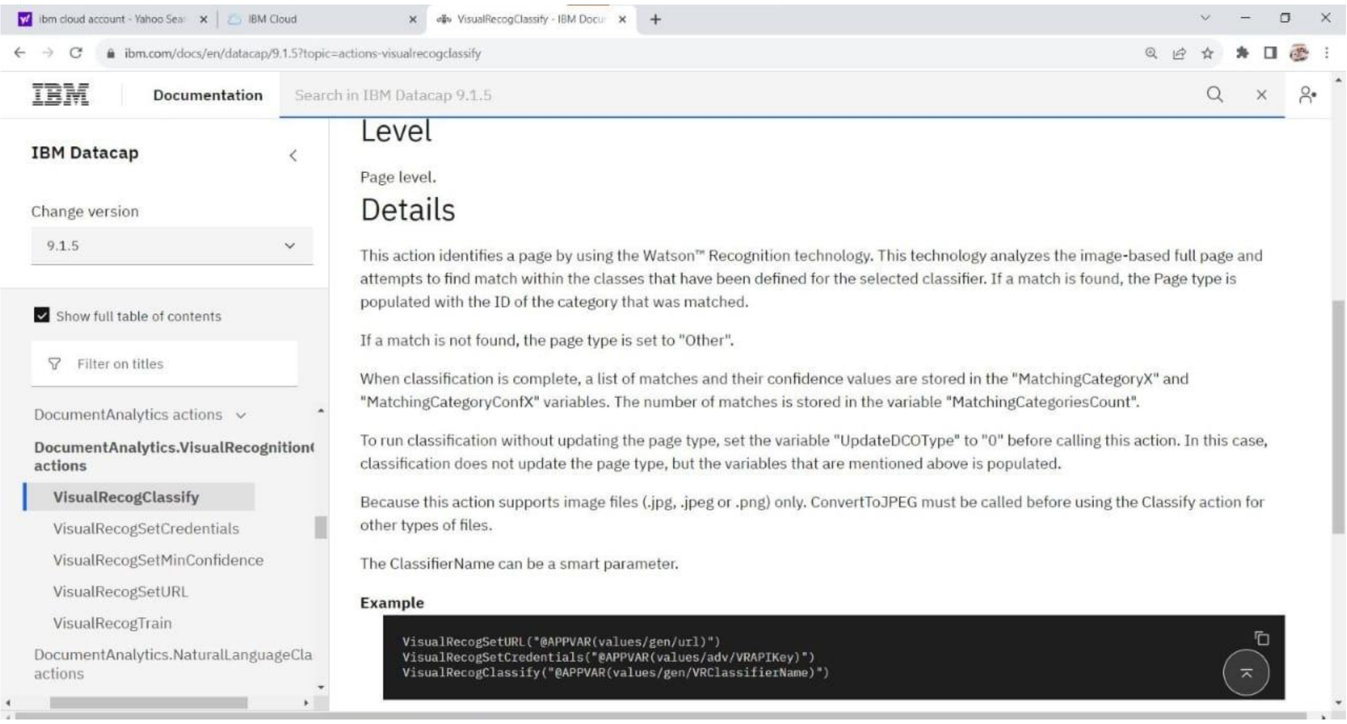
```
bool VisualRecogClassify (string ClassifierName)
```

Parameters

string **ClassifierName** - Name of the Classifier to be used

Returns

True, if the action succeeds. Otherwise, **False**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VisualRecogClassify
VisualRecogSetCredentials
VisualRecogSetMinConfidence
VisualRecogSetURL
VisualRecogTrain
DocumentAnalytics.NaturalLanguageCla actions

Level

Page level.

Details

This action identifies a page by using the Watson™ Recognition technology. This technology analyzes the image-based full page and attempts to find match within the classes that have been defined for the selected classifier. If a match is found, the Page type is populated with the ID of the category that was matched.

If a match is not found, the page type is set to "Other".

When classification is complete, a list of matches and their confidence values are stored in the "MatchingCategoryX" and "MatchingCategoryConfX" variables. The number of matches is stored in the variable "MatchingCategoriesCount".

To run classification without updating the page type, set the variable "UpdateDCOType" to "0" before calling this action. In this case, classification does not update the page type, but the variables that are mentioned above is populated.

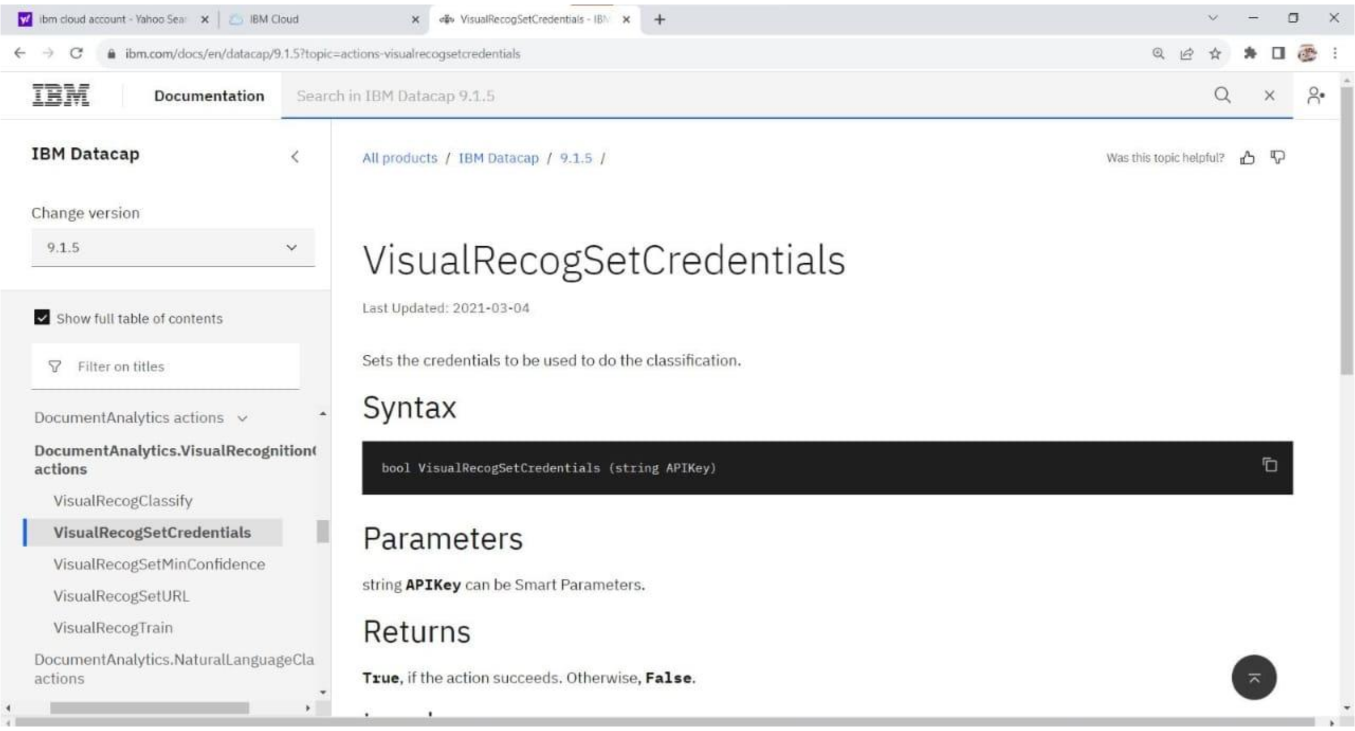
Because this action supports image files (.jpg, .jpeg or .png) only. ConvertToJPEG must be called before using the Classify action for other types of files.

The ClassifierName can be a smart parameter.

Example

```
VisualRecogSetURL("@APPVAR(values/gen/url)")
VisualRecogSetCredentials("@APPVAR(values/adv/VRAPIKey)")
VisualRecogClassify("@APPVAR(values/gen/VRClassifierName)")
```

This is VisualRecogSetCredentials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Was this topic helpful?

VisualRecogSetCredentials

Last Updated: 2021-03-04

Sets the credentials to be used to do the classification.

Syntax

```
bool VisualRecogSetCredentials (string APIKey)
```

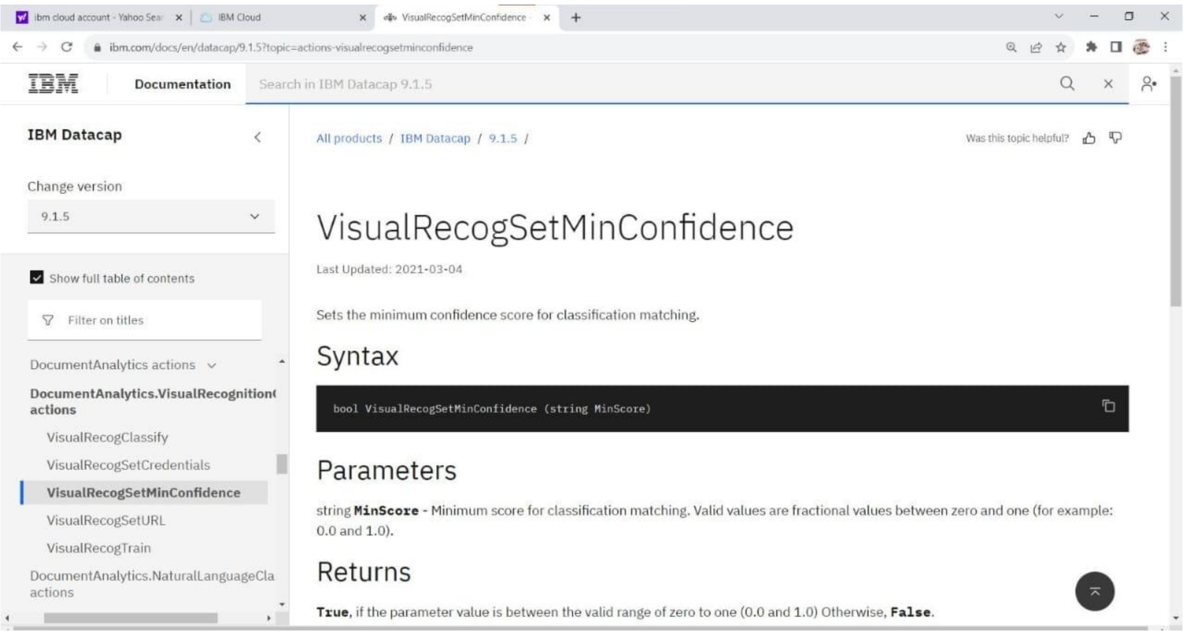
Parameters

string **APIKey** can be Smart Parameters.

Returns

True, if the action succeeds. Otherwise, **False**.

This is VisualRecogSetMinConfidence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Was this topic helpful?

VisualRecogSetMinConfidence

Last Updated: 2021-03-04

Sets the minimum confidence score for classification matching.

Syntax

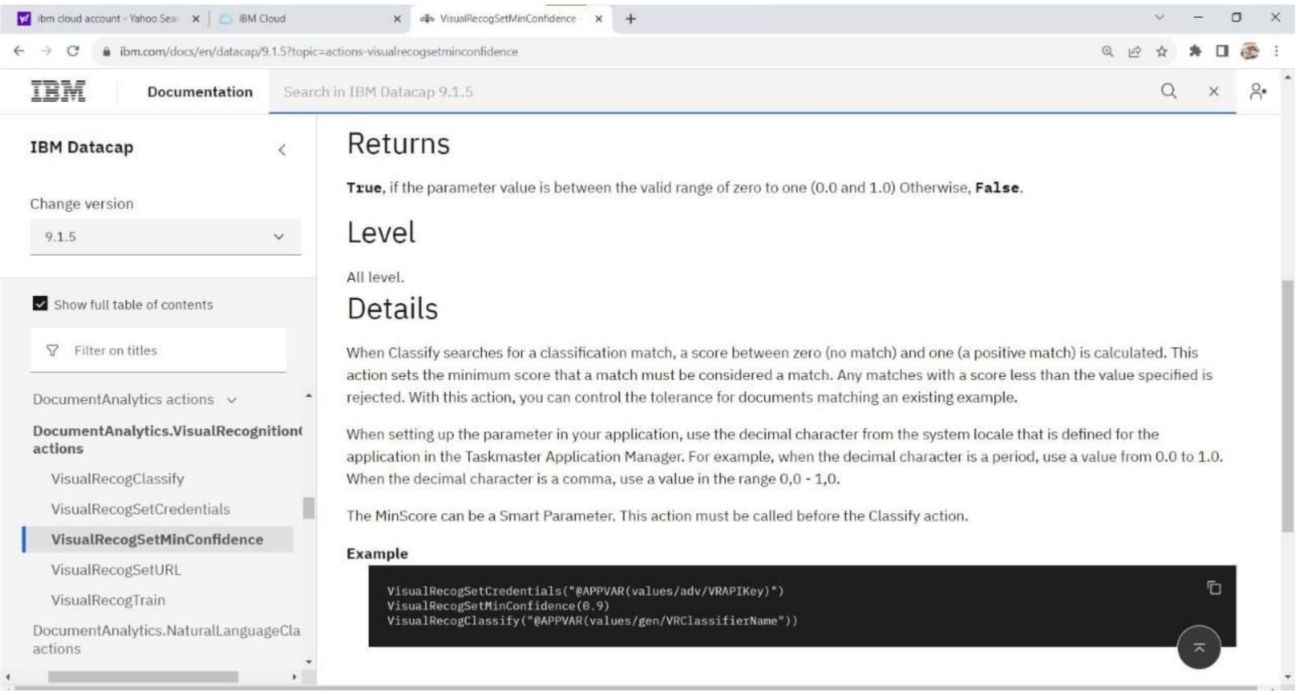
```
bool VisualRecogSetMinConfidence (string MinScore)
```

Parameters

string **MinScore** - Minimum score for classification matching. Valid values are fractional values between zero and one (for example: 0.0 and 1.0).

Returns

True, if the parameter value is between the valid range of zero to one (0.0 and 1.0) Otherwise, **False**.


ibm cloud account - Yahoo Sear
IBM Cloud
VisualRecogSetMinConfidence
ibm.com/docs/en/datacap/9.1.5?topic=actions-visualrecogsetminconfidence
IBM
Documentation
Search in IBM Datacap 9.1.5
IBM Datacap
Change version
9.1.5
Show full table of contents
Filter on titles
DocumentAnalytics actions
DocumentAnalytics.VisualRecognition actions
VisualRecogClassify
VisualRecogSetCredentials
VisualRecogSetMinConfidence
VisualRecogSetURL
VisualRecogTrain
DocumentAnalytics.NaturalLanguageCla actions

Returns

True, if the parameter value is between the valid range of zero to one (0.0 and 1.0) Otherwise, **False**.

Level

All level.

Details

When Classify searches for a classification match, a score between zero (no match) and one (a positive match) is calculated. This action sets the minimum score that a match must be considered a match. Any matches with a score less than the value specified is rejected. With this action, you can control the tolerance for documents matching an existing example.

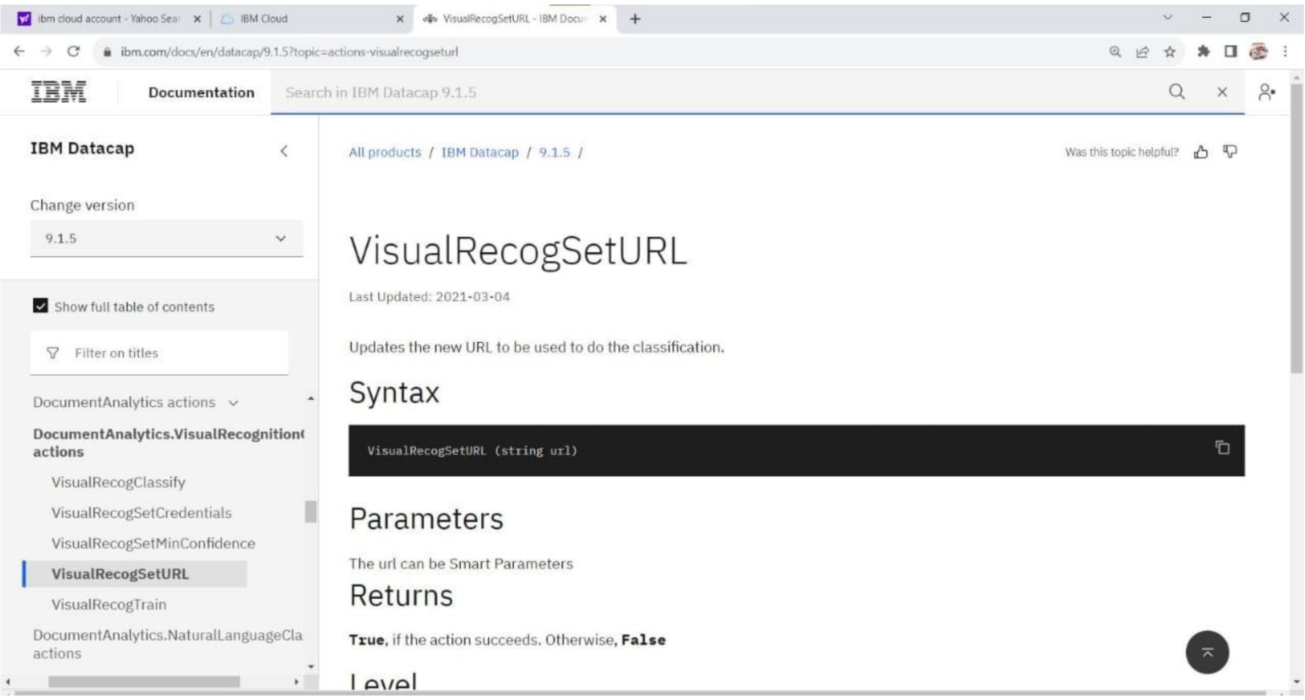
When setting up the parameter in your application, use the decimal character from the system locale that is defined for the application in the Taskmaster Application Manager. For example, when the decimal character is a period, use a value from 0.0 to 1.0. When the decimal character is a comma, use a value in the range 0,0 - 1,0.

The MinScore can be a Smart Parameter. This action must be called before the Classify action.

Example

```
VisualRecogSetCredentials("@APPVAR(values/adv/VRAPIKey)")
VisualRecogSetMinConfidence(0.9)
VisualRecogClassify("@APPVAR(values/gen/VRClassifierName"))
```

This is VisualRecogSetURL


ibm cloud account - Yahoo Sear
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VisualRecogSetURL - IBM Docu
ibm.com/docs/en/datacap/9.1.5?topic=actions-visualrecogseturl
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Documentation
Search in IBM Datacap 9.1.5
IBM Datacap
Change version
9.1.5
Show full table of contents
Filter on titles
DocumentAnalytics actions
DocumentAnalytics.VisualRecognition actions
VisualRecogClassify
VisualRecogSetCredentials
VisualRecogSetMinConfidence
VisualRecogSetURL
VisualRecogTrain
DocumentAnalytics.NaturalLanguageCla actions
All products / IBM Datacap / 9.1.5 /
Was this topic helpful?

VisualRecogSetURL

Last Updated: 2021-03-04

Updates the new URL to be used to do the classification.

Syntax

```
VisualRecogSetURL (string url)
```

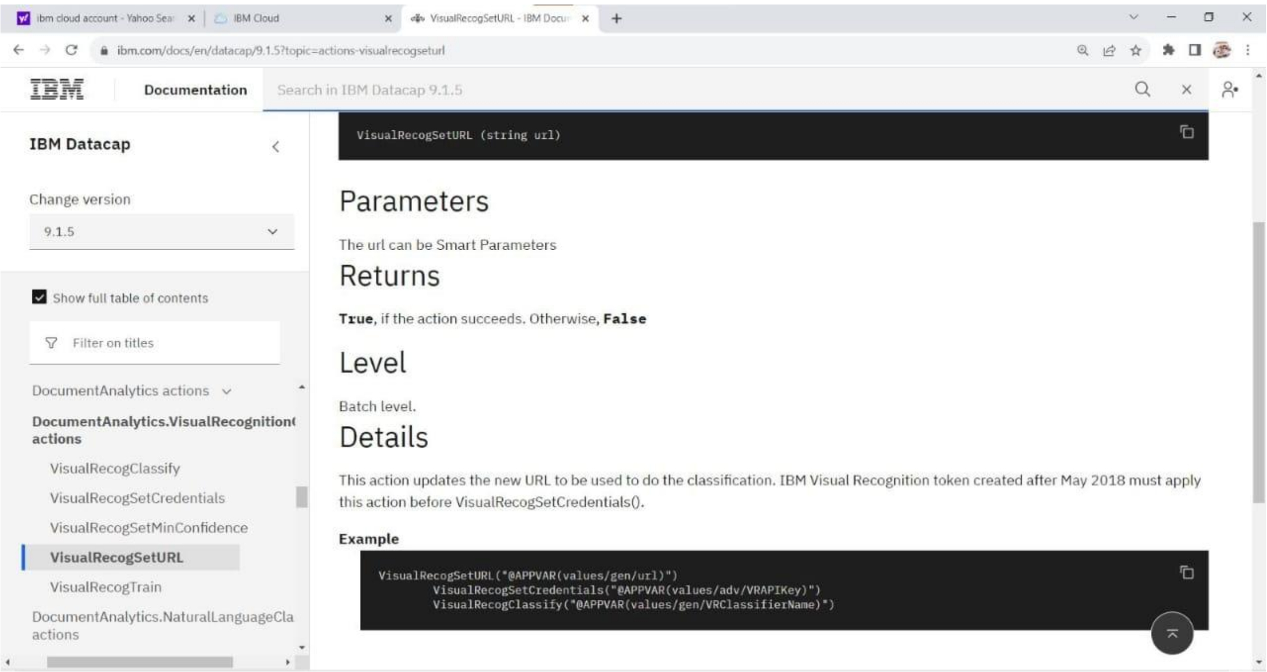
Parameters

The url can be Smart Parameters

Returns

True, if the action succeeds. Otherwise, **False**

Level


ibm cloud account - Yahoo Sear
IBM Cloud
VisualRecogSetURL - IBM Docu
ibm.com/docs/en/datacap/9.1.5?topic=actions-visualrecogseturl
IBM
Documentation
Search in IBM Datacap 9.1.5
IBM Datacap
Change version
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Show full table of contents
Filter on titles
DocumentAnalytics actions
DocumentAnalytics.VisualRecognition(actions
VisualRecogClassify
VisualRecogSetCredentials
VisualRecogSetMinConfidence
VisualRecogSetURL
VisualRecogTrain
DocumentAnalytics.NaturalLanguageCla actions

```
VisualRecogSetURL (string url)
```

Parameters

The url can be Smart Parameters

Returns

True, if the action succeeds. Otherwise, **False**

Level

Batch level.

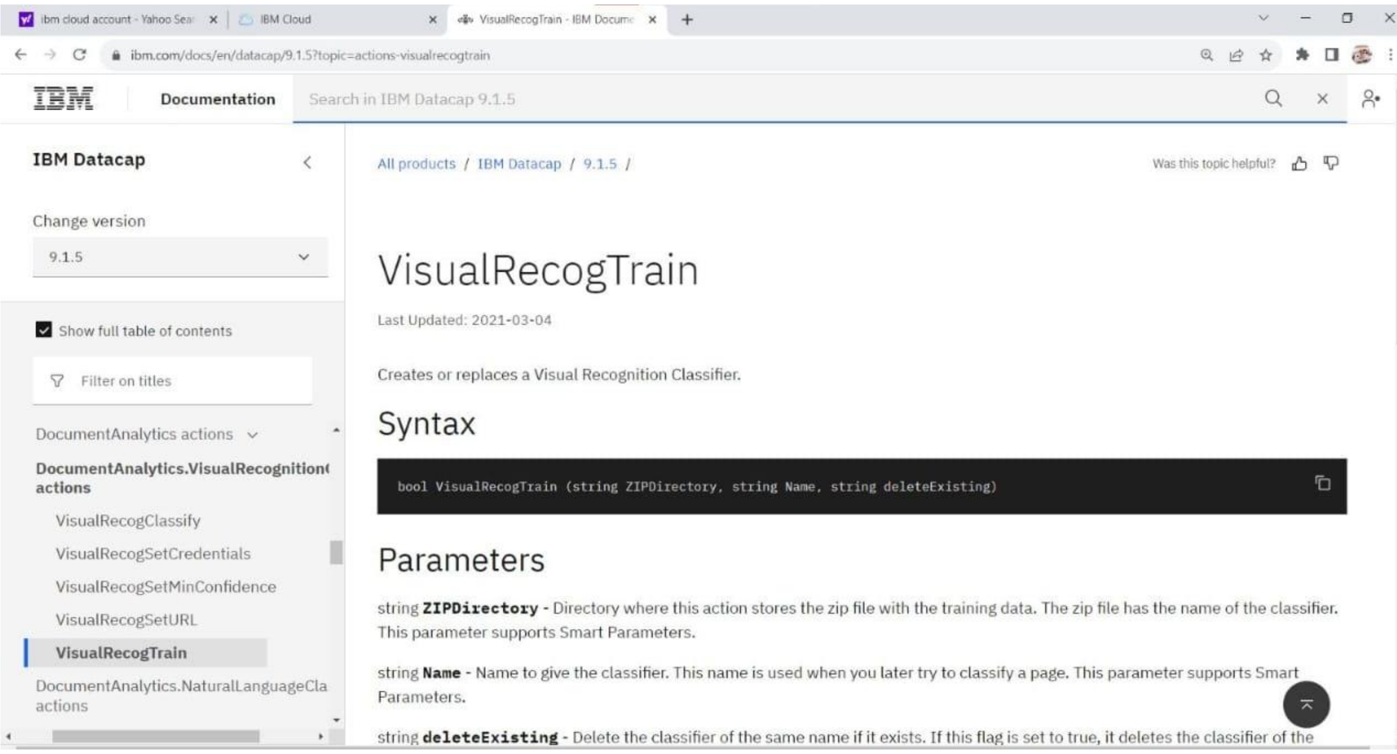
Details

This action updates the new URL to be used to do the classification. IBM Visual Recognition token created after May 2018 must apply this action before VisualRecogSetCredentials().

Example

```
VisualRecogSetURL("@APPVAR(values/gen/url)")
        VisualRecogSetCredentials("@APPVAR(values/adv/VRAPIKey)")
        VisualRecogClassify("@APPVAR(values/gen/VRClassifierName)")
```

This is VisualRecogTrain


ibm cloud account - Yahoo Sear
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ibm.com/docs/en/datacap/9.1.5?topic=actions-visualrecogtrain
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Documentation
Search in IBM Datacap 9.1.5
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DocumentAnalytics actions
DocumentAnalytics.VisualRecognition(actions
VisualRecogClassify
VisualRecogSetCredentials
VisualRecogSetMinConfidence
VisualRecogSetURL
VisualRecogTrain
DocumentAnalytics.NaturalLanguageCla actions
All products / IBM Datacap / 9.1.5 /
Was this topic helpful?

VisualRecogTrain

Last Updated: 2021-03-04

Creates or replaces a Visual Recognition Classifier.

Syntax

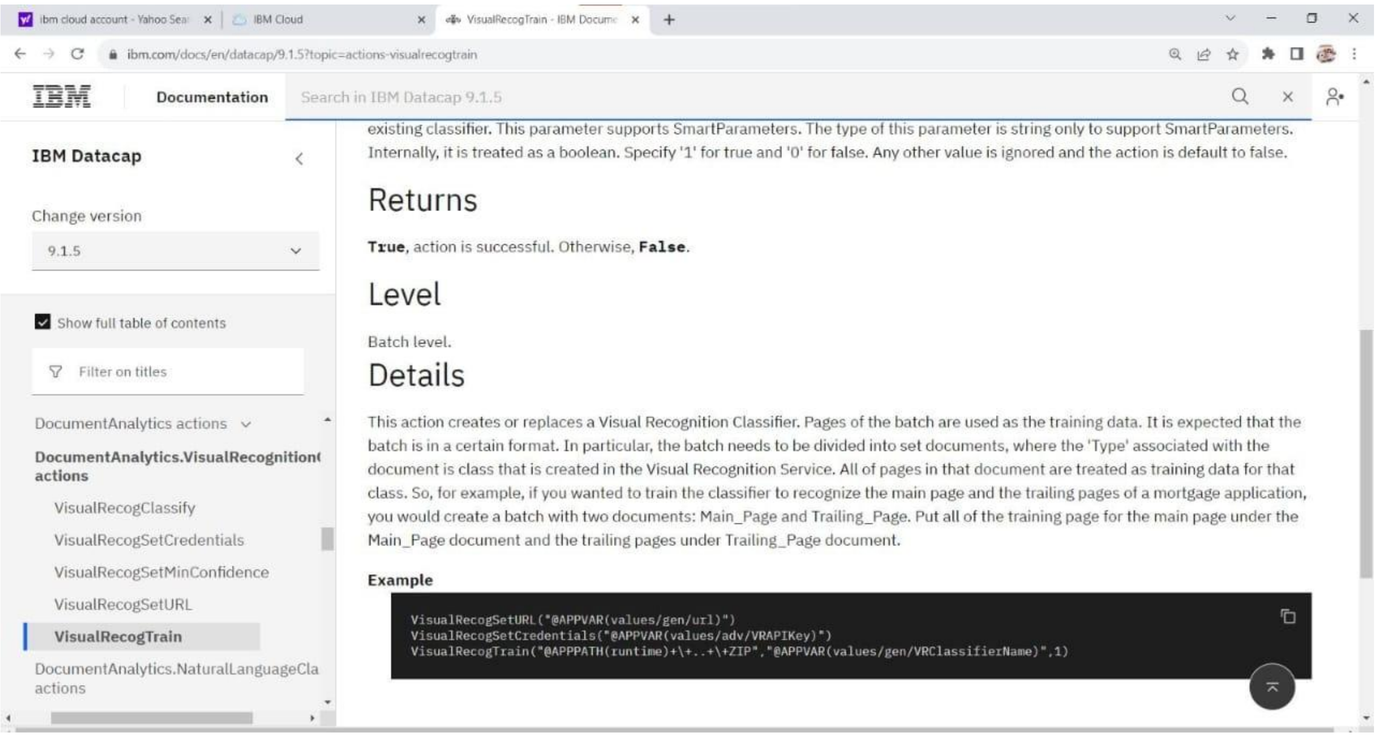
```
bool VisualRecogTrain (string ZIPDirectory, string Name, string deleteExisting)
```

Parameters

string **ZIPDirectory** - Directory where this action stores the zip file with the training data. The zip file has the name of the classifier. This parameter supports Smart Parameters.

string **Name** - Name to give the classifier. This name is used when you later try to classify a page. This parameter supports Smart Parameters.

string **deleteExisting** - Delete the classifier of the same name if it exists. If this flag is set to true, it deletes the classifier of the


ibm cloud account - Yahoo Sea
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VisualRecogTrain - IBM Docume
ibm.com/docs/en/datacap/9.1.5?topic=actions-visualrecogtrain
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Search in IBM Datacap 9.1.5
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Filter on titles
DocumentAnalytics actions
DocumentAnalytics.VisualRecognition(actions
VisualRecogClassify
VisualRecogSetCredentials
VisualRecogSetMinConfidence
VisualRecogSetURL
VisualRecogTrain
DocumentAnalytics.NaturalLanguageCla actions

existing classifier. This parameter supports SmartParameters. The type of this parameter is string only to support SmartParameters. Internally, it is treated as a boolean. Specify '1' for true and '0' for false. Any other value is ignored and the action is default to false.

Returns

True, action is successful. Otherwise, **False**.

Level

Batch level.

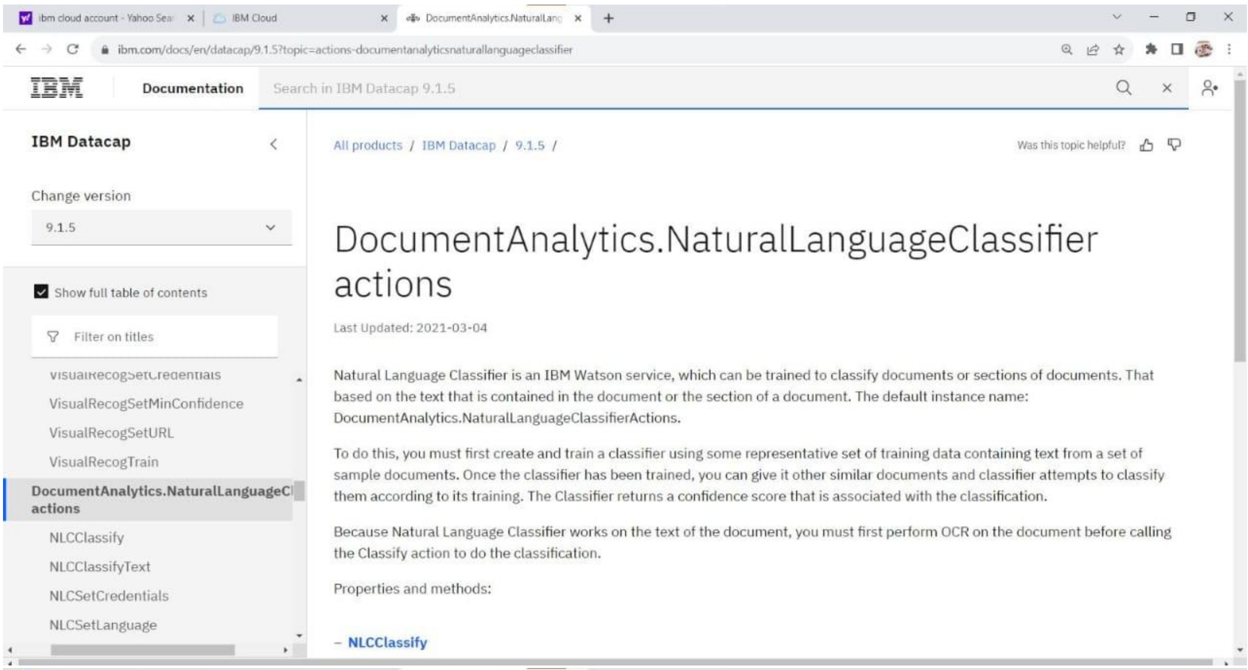
Details

This action creates or replaces a Visual Recognition Classifier. Pages of the batch are used as the training data. It is expected that the batch is in a certain format. In particular, the batch needs to be divided into set documents, where the 'Type' associated with the document is class that is created in the Visual Recognition Service. All of pages in that document are treated as training data for that class. So, for example, if you wanted to train the classifier to recognize the main page and the trailing pages of a mortgage application, you would create a batch with two documents: Main_Page and Trailing_Page. Put all of the training page for the main page under the Main_Page document and the trailing pages under Trailing_Page document.

Example

```
VisualRecogSetURL("@APPVAR(values/gen/url)")
VisualRecogSetCredentials("@APPVAR(values/adv/VRAPIKey)")
VisualRecogTrain("@APPPATH(runtime)+\+..+\+ZIP","@APPVAR(values/gen/VRClassifierName)",1)
```

Then open DocumentAnalytics.NaturalLanguageClassifier actions, the page will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IBM Cloud
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ibm.com/docs/en/datacap/9.1.5?topic=actions-documentanalyticsnaturallanguageclassifier
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Documentation
Search in IBM Datacap 9.1.5
IBM Datacap
Change version
9.1.5
Show full table of contents
Filter on titles
VisualRecogSetCredentials
VisualRecogSetMinConfidence
VisualRecogSetURL
VisualRecogTrain
DocumentAnalytics.NaturalLanguageCl actions
NLCClassify
NLCClassifyText
NLCSetCredentials
NLCSetLanguage
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Was this topic helpful?

DocumentAnalytics.NaturalLanguageClassifier actions

Last Updated: 2021-03-04

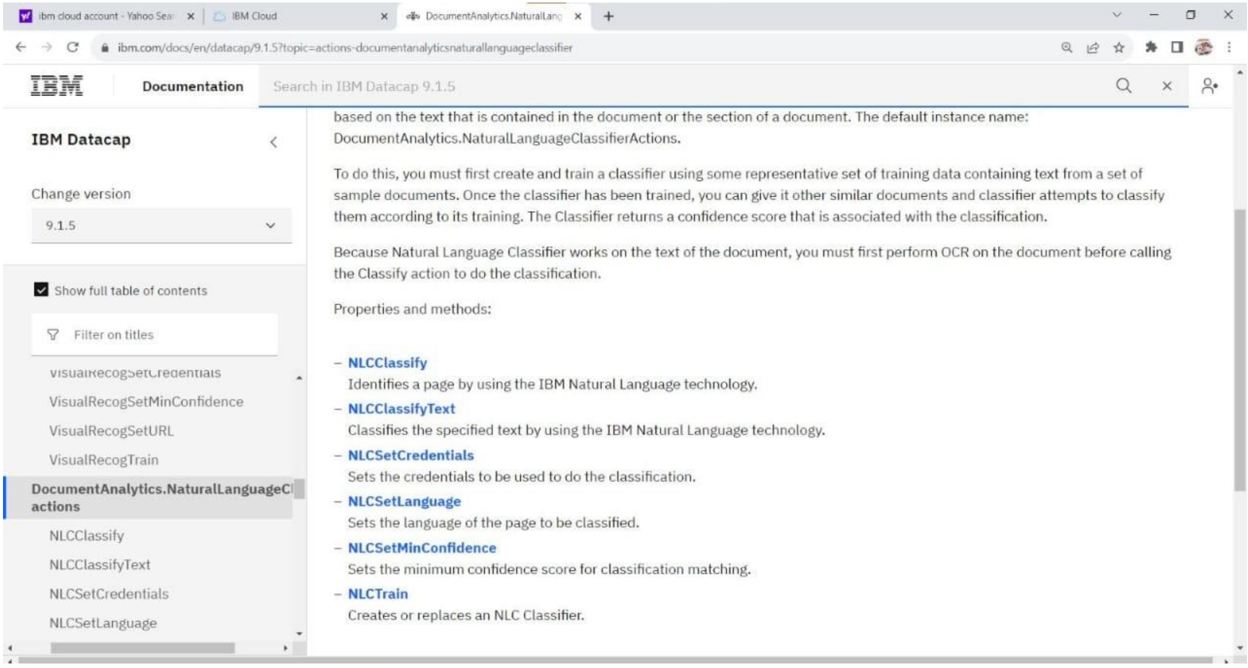
Natural Language Classifier is an IBM Watson service, which can be trained to classify documents or sections of documents. That based on the text that is contained in the document or the section of a document. The default instance name: DocumentAnalytics.NaturalLanguageClassifierActions.

To do this, you must first create and train a classifier using some representative set of training data containing text from a set of sample documents. Once the classifier has been trained, you can give it other similar documents and classifier attempts to classify them according to its training. The Classifier returns a confidence score that is associated with the classification.

Because Natural Language Classifier works on the text of the document, you must first perform OCR on the document before calling the Classify action to do the classification.

Properties and methods:

- **NLCClassify**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ibm.com/docs/en/datacap/9.1.5?topic=actions-documentanalyticsnaturallanguageclassifier
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Documentation
Search in IBM Datacap 9.1.5
IBM Datacap
Change version
9.1.5
Show full table of contents
Filter on titles
VisualRecogSetCredentials
VisualRecogSetMinConfidence
VisualRecogSetURL
VisualRecogTrain
DocumentAnalytics.NaturalLanguageCl actions
NLCClassify
NLCClassifyText
NLCSetCredentials
NLCSetLanguage

based on the text that is contained in the document or the section of a document. The default instance name: DocumentAnalytics.NaturalLanguageClassifierActions.

To do this, you must first create and train a classifier using some representative set of training data containing text from a set of sample documents. Once the classifier has been trained, you can give it other similar documents and classifier attempts to classify them according to its training. The Classifier returns a confidence score that is associated with the classification.

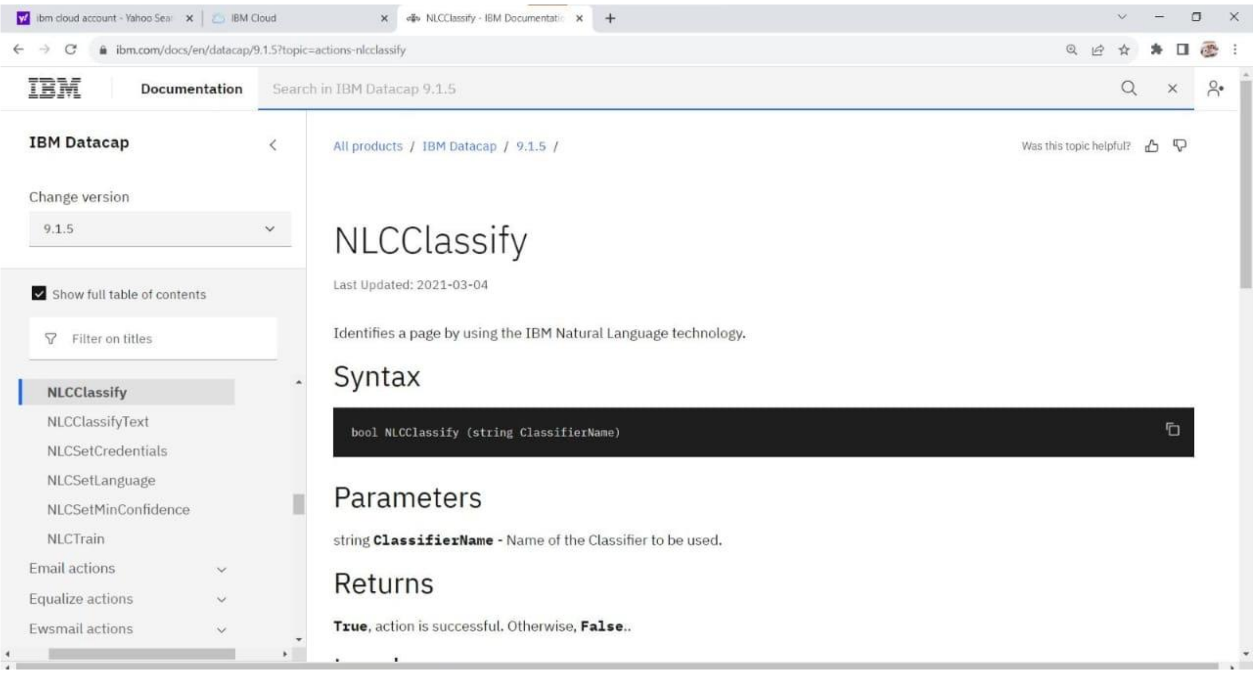
Because Natural Language Classifier works on the text of the document, you must first perform OCR on the document before calling the Classify action to do the classification.

Properties and methods:

- **NLCClassify**
  Identifies a page by using the IBM Natural Language technology.
- **NLCClassifyText**
  Classifies the specified text by using the IBM Natural Language technology.
- **NLCSetCredentials**
  Sets the credentials to be used to do the classification.
- **NLCSetLanguage**
  Sets the language of the page to be classified.
- **NLCSetMinConfidence**
  Sets the minimum confidence score for classification matching.
- **NLCTrain**
  Creates or replaces an NLC Classifier.

NLCClassify

It Identifies a page by using the IBM Natural Language technology.



NLCClassify

Last Updated: 2021-03-04

Identifies a page by using the IBM Natural Language technology.

Syntax

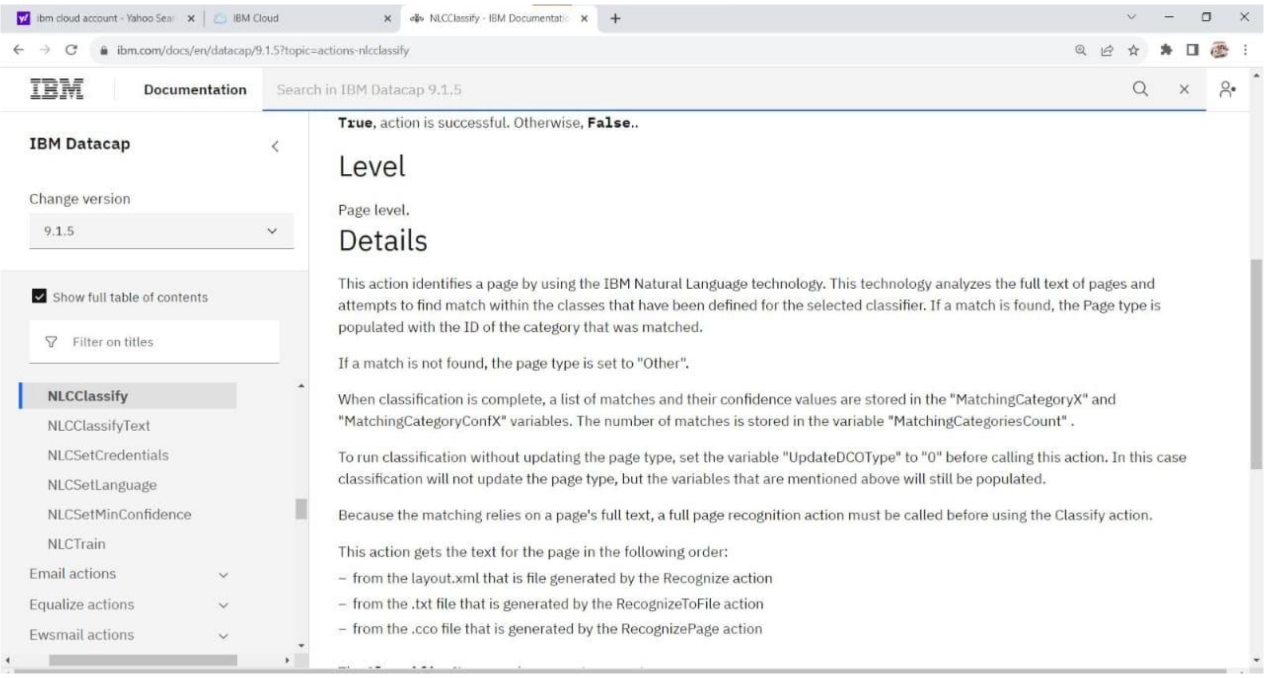
```
bool NLCClassify (string ClassifierName)
```

Parameters

string **ClassifierName** - Name of the Classifier to be used.

Returns

True, action is successful. Otherwise, **False**..



True, action is successful. Otherwise, **False**..

Level

Page level.

Details

This action identifies a page by using the IBM Natural Language technology. This technology analyzes the full text of pages and attempts to find match within the classes that have been defined for the selected classifier. If a match is found, the Page type is populated with the ID of the category that was matched.

If a match is not found, the page type is set to "Other".

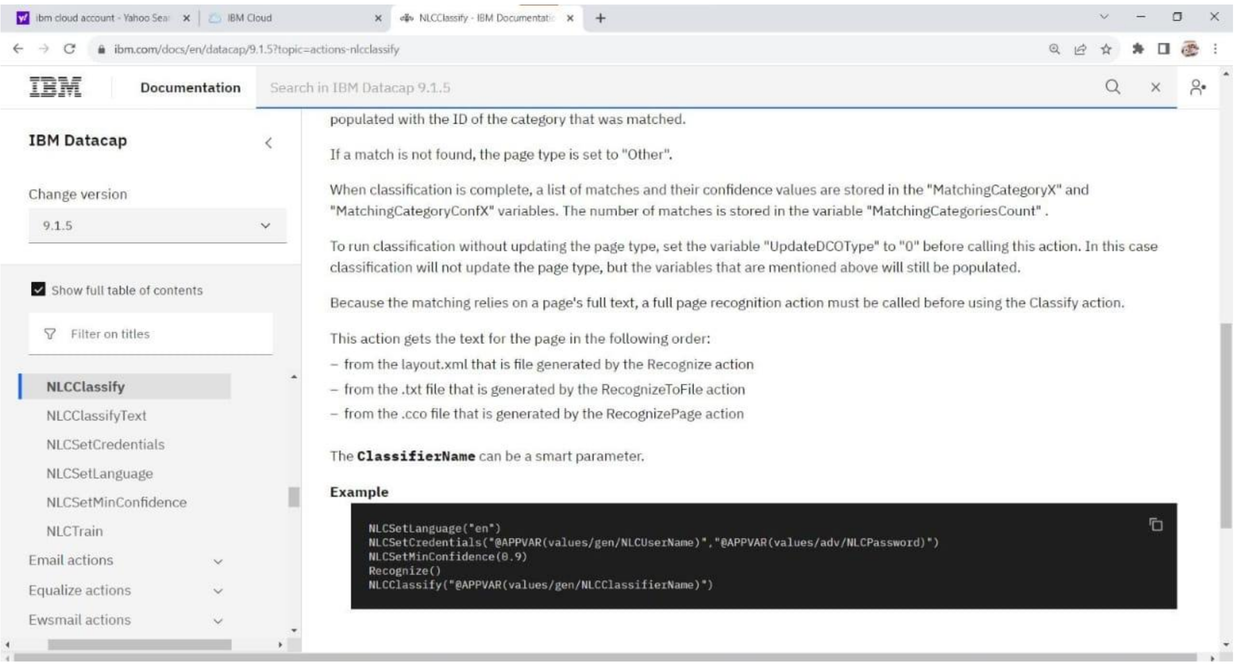
When classification is complete, a list of matches and their confidence values are stored in the "MatchingCategoryX" and "MatchingCategoryConfX" variables. The number of matches is stored in the variable "MatchingCategoriesCount" .

To run classification without updating the page type, set the variable "UpdateDCOType" to "0" before calling this action. In this case classification will not update the page type, but the variables that are mentioned above will still be populated.

Because the matching relies on a page's full text, a full page recognition action must be called before using the Classify action.

This action gets the text for the page in the following order:

- from the layout.xml that is file generated by the Recognize action
- from the .txt file that is generated by the RecognizeToFile action
- from the .cco file that is generated by the RecognizePage action



populated with the ID of the category that was matched.

If a match is not found, the page type is set to "Other".

When classification is complete, a list of matches and their confidence values are stored in the "MatchingCategoryX" and "MatchingCategoryConfX" variables. The number of matches is stored in the variable "MatchingCategoriesCount" .

To run classification without updating the page type, set the variable "UpdateDCOType" to "0" before calling this action. In this case classification will not update the page type, but the variables that are mentioned above will still be populated.

Because the matching relies on a page's full text, a full page recognition action must be called before using the Classify action.

This action gets the text for the page in the following order:
- from the layout.xml that is file generated by the Recognize action
- from the .txt file that is generated by the RecognizeToFile action
- from the .cco file that is generated by the RecognizePage action

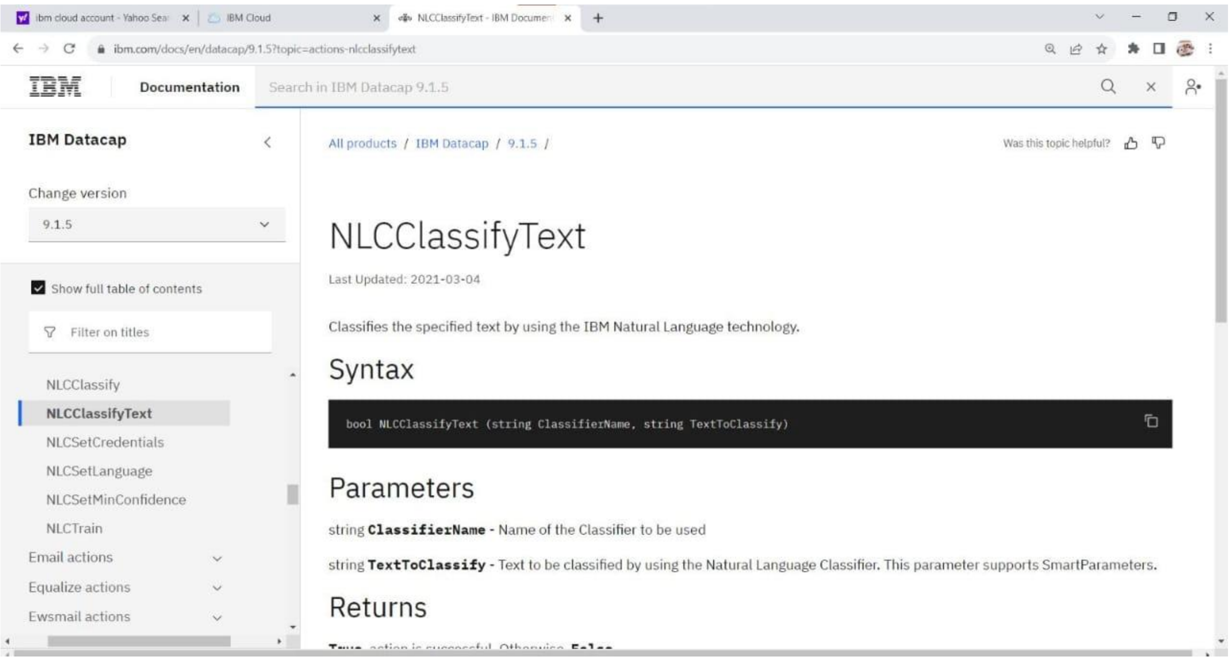
The **ClassifierName** can be a smart parameter.

Example

```
NLCSetLanguage("en")
NLCSetCredentials("@APPVAR(values/gen/NLCUserName)","@APPVAR(values/adv/NLCPassword)")
NLCSetMinConfidence(0.9)
Recognize()
NLCClassify("@APPVAR(values/gen/NLCClassifierName)")
```

NLCClassifyText

Classifies the specified text by using the IBM Natural Language technology.



NLCClassifyText

Last Updated: 2021-03-04

Classifies the specified text by using the IBM Natural Language technology.

Syntax

```
bool NLCClassifyText (string ClassifierName, string TextToClassify)
```

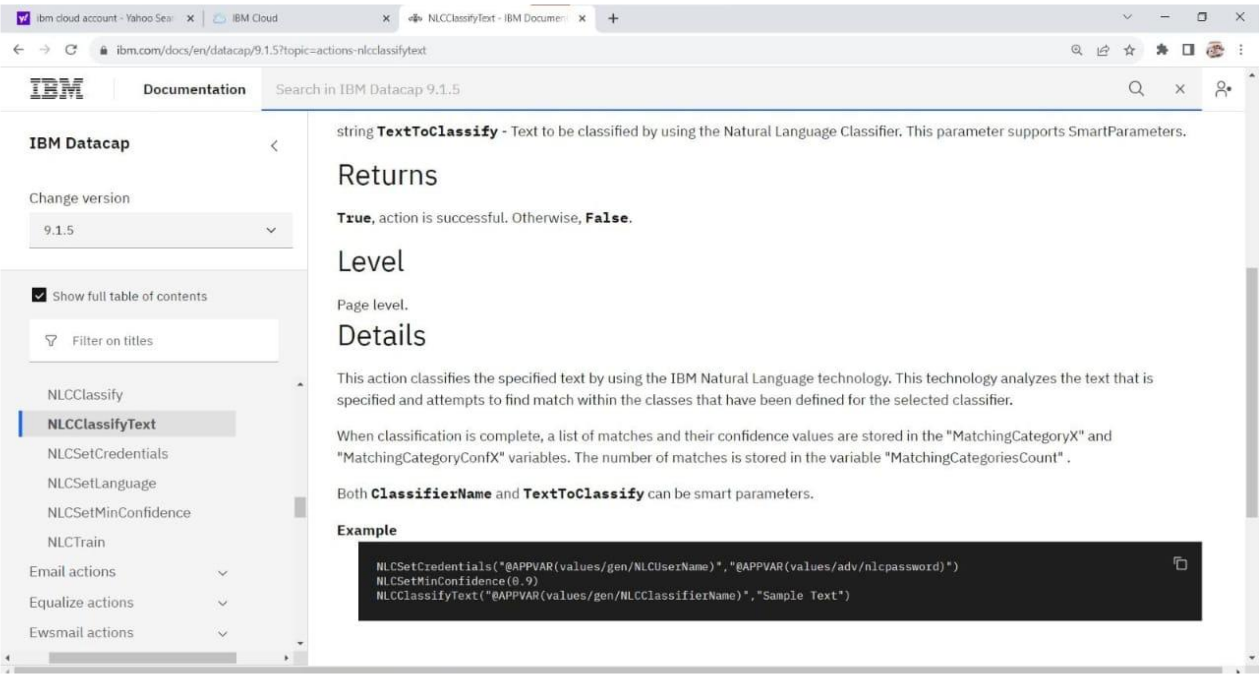
Parameters

string **ClassifierName** - Name of the Classifier to be used

string **TextToClassify** - Text to be classified by using the Natural Language Classifier. This parameter supports SmartParameters.

Returns

True - action is successful. Otherwise, **False**.



string **TextToClassify** - Text to be classified by using the Natural Language Classifier. This parameter supports SmartParameters.

Returns

True, action is successful. Otherwise, **False**.

Level

Page level.

Details

This action classifies the specified text by using the IBM Natural Language technology. This technology analyzes the text that is specified and attempts to find match within the classes that have been defined for the selected classifier.

When classification is complete, a list of matches and their confidence values are stored in the "MatchingCategoryX" and "MatchingCategoryConfX" variables. The number of matches is stored in the variable "MatchingCategoriesCount" .

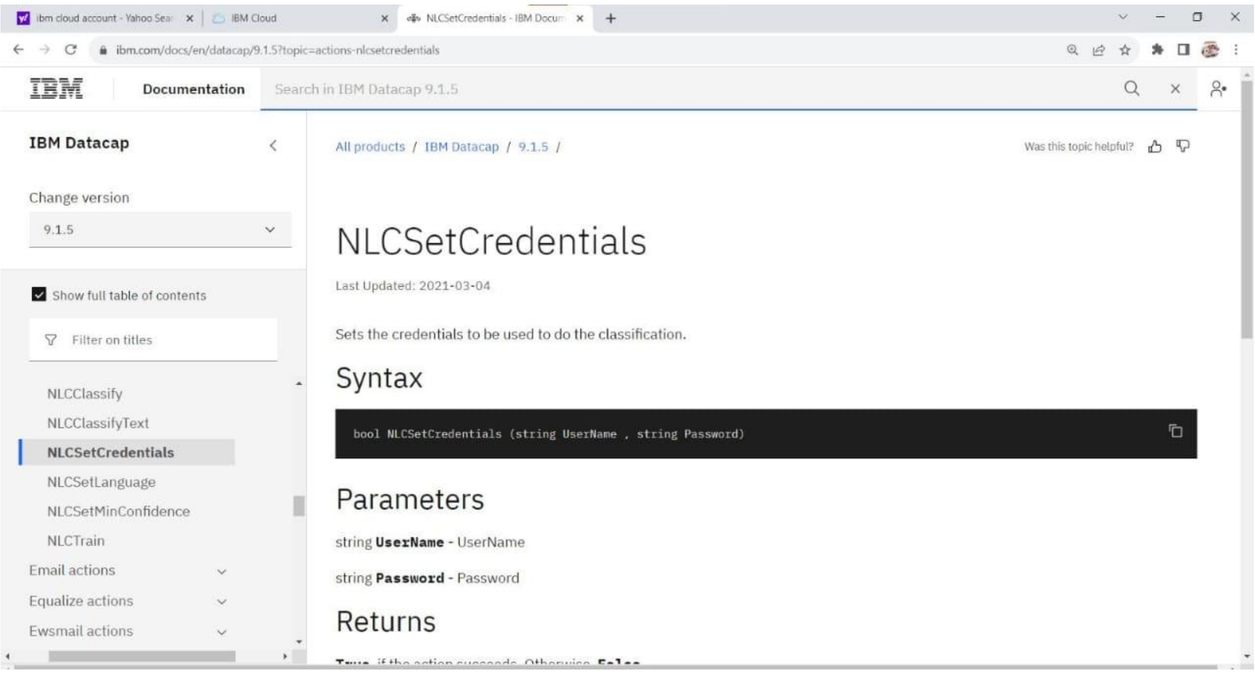
Both **ClassifierName** and **TextToClassify** can be smart parameters.

Example

```
NLCSetCredentials("@APPVAR(values/gen/NLCUserName)","@APPVAR(values/adv/nlcpassword)")
NLCSetMinConfidence(0.9)
NLCClassifyText("@APPVAR(values/gen/NLCClassifierName)","Sample Text")
```

NLCSetCredentials

Sets the credentials to be used to do the classification.



NLCSetCredentials

Last Updated: 2021-03-04

Sets the credentials to be used to do the classification.

Syntax

```
bool NLCSetCredentials (string UserName , string Password)
```

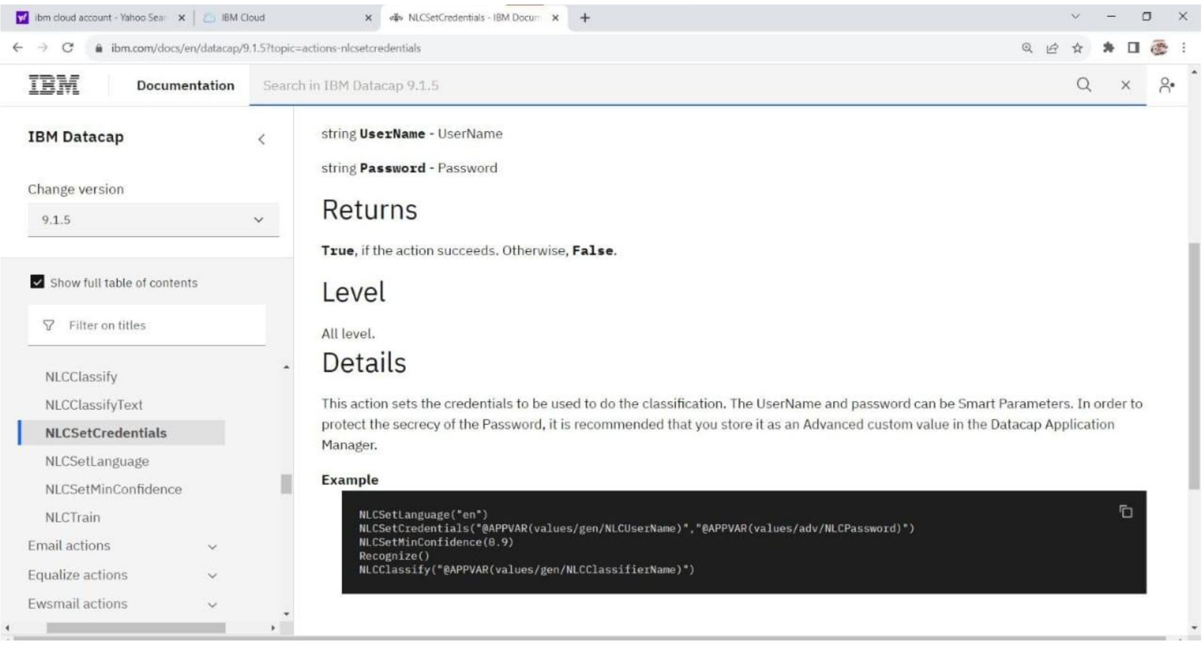
Parameters

string **UserName** - UserName

string **Password** - Password

Returns

True, if the action succeeds. Otherwise, **False**.



string **UserName** - UserName

string **Password** - Password

Returns

True, if the action succeeds. Otherwise, **False**.

Level

All level.

Details

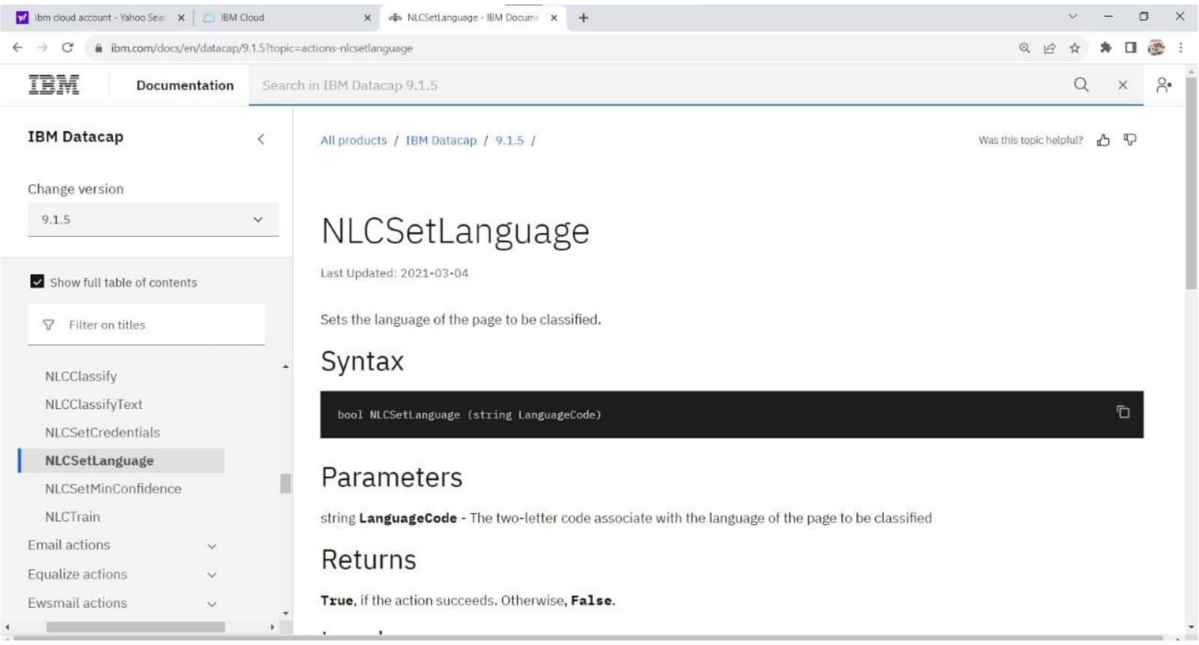
This action sets the credentials to be used to do the classification. The UserName and password can be Smart Parameters. In order to protect the secrecy of the Password, it is recommended that you store it as an Advanced custom value in the Datacap Application Manager.

Example

```
NLCSetLanguage("en")
NLCSetCredentials("@APPVAR(values/gen/NLCUserName)","@APPVAR(values/adv/NLCPassword)")
NLCSetMinConfidence(0.9)
Recognize()
NLCClassify("@APPVAR(values/gen/NLCClassifierName)")
```

NLCSetLanguage

Sets the language of the page to be classified.



NLCSetLanguage

Last Updated: 2021-03-04

Sets the language of the page to be classified.

Syntax

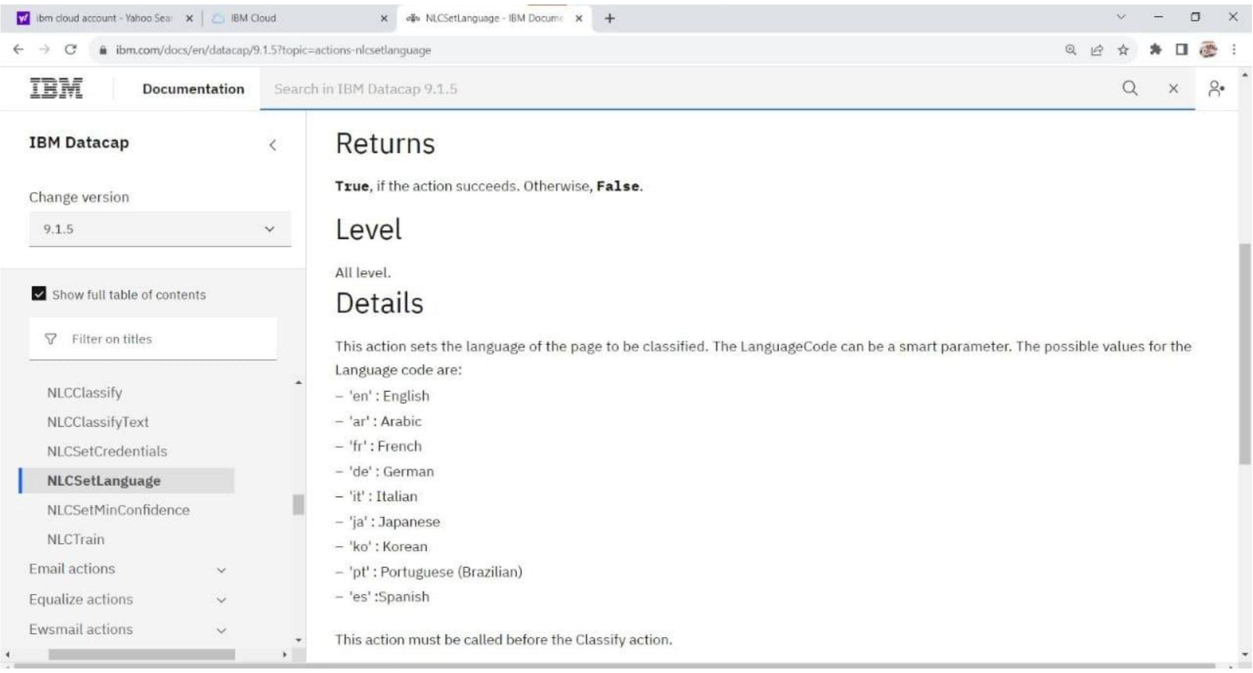
```
bool NLCSetLanguage (string LanguageCode)
```

Parameters

string **LanguageCode** - The two-letter code associate with the language of the page to be classified

Returns

True, if the action succeeds. Otherwise, **False**.



Returns

True, if the action succeeds. Otherwise, **False**.

Level

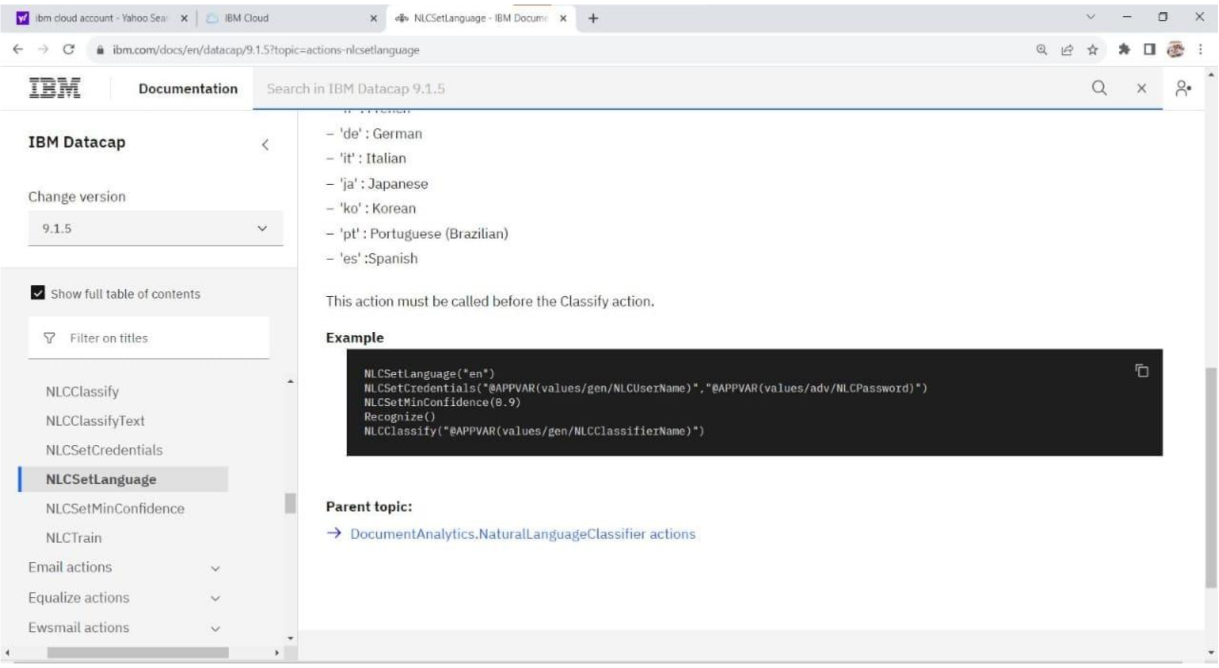
All level.

Details

This action sets the language of the page to be classified. The LanguageCode can be a smart parameter. The possible values for the Language code are:

– 'en' : English
– 'ar' : Arabic
– 'fr' : French
– 'de' : German
– 'it' : Italian
– 'ja' : Japanese
– 'ko' : Korean
– 'pt' : Portuguese (Brazilian)
– 'es' :Spanish

This action must be called before the Classify action.



– 'de' : German
– 'it' : Italian
– 'ja' : Japanese
– 'ko' : Korean
– 'pt' : Portuguese (Brazilian)
– 'es' :Spanish

This action must be called before the Classify action.

Example

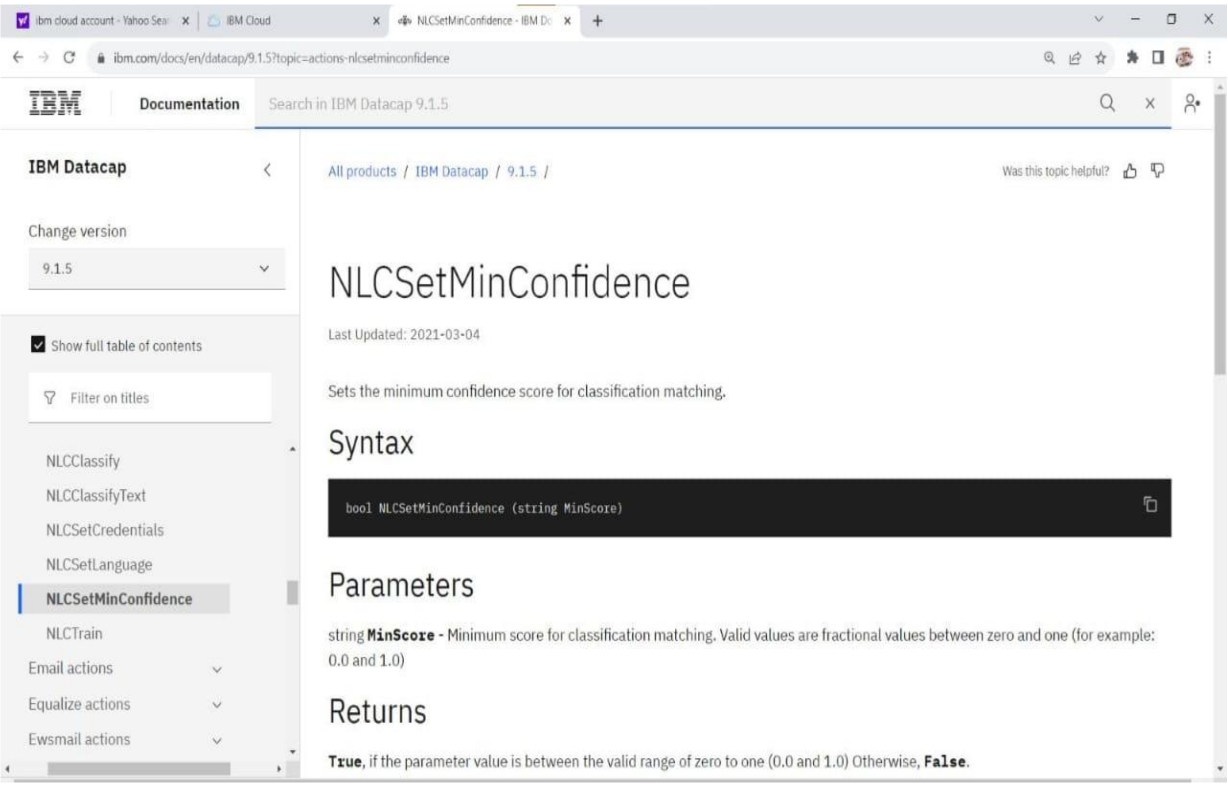
```
NLCSetLanguage("en")
NLCSetCredentials("@APPVAR(values/gen/NLCUserName)","@APPVAR(values/adv/NLCPassword)")
NLCSetMinConfidence(0.9)
Recognize()
NLCClassify("@APPVAR(values/gen/NLCClassifierName)")
```

Parent topic:

→ DocumentAnalytics.NaturalLanguageClassifier actions

NLCSetMinConfidence

Sets the minimum confidence score for classification matching.



NLCSetMinConfidence

Last Updated: 2021-03-04

Sets the minimum confidence score for classification matching.

Syntax

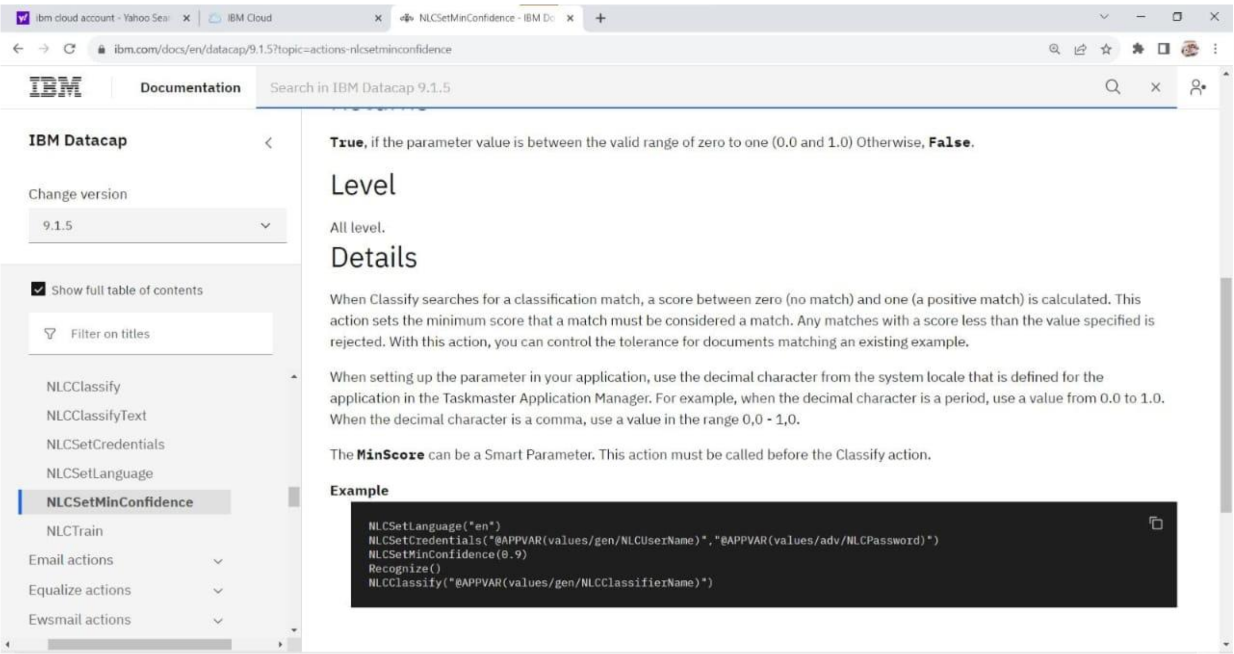
```
bool NLCSetMinConfidence (string MinScore)
```

Parameters

string **MinScore** - Minimum score for classification matching. Valid values are fractional values between zero and one (for example: 0.0 and 1.0)

Returns

True, if the parameter value is between the valid range of zero to one (0.0 and 1.0) Otherwise, **False**.



True, if the parameter value is between the valid range of zero to one (0.0 and 1.0) Otherwise, **False**.

Level

All level.

Details

When Classify searches for a classification match, a score between zero (no match) and one (a positive match) is calculated. This action sets the minimum score that a match must be considered a match. Any matches with a score less than the value specified is rejected. With this action, you can control the tolerance for documents matching an existing example.

When setting up the parameter in your application, use the decimal character from the system locale that is defined for the application in the Taskmaster Application Manager. For example, when the decimal character is a period, use a value from 0.0 to 1.0. When the decimal character is a comma, use a value in the range 0,0 - 1,0.

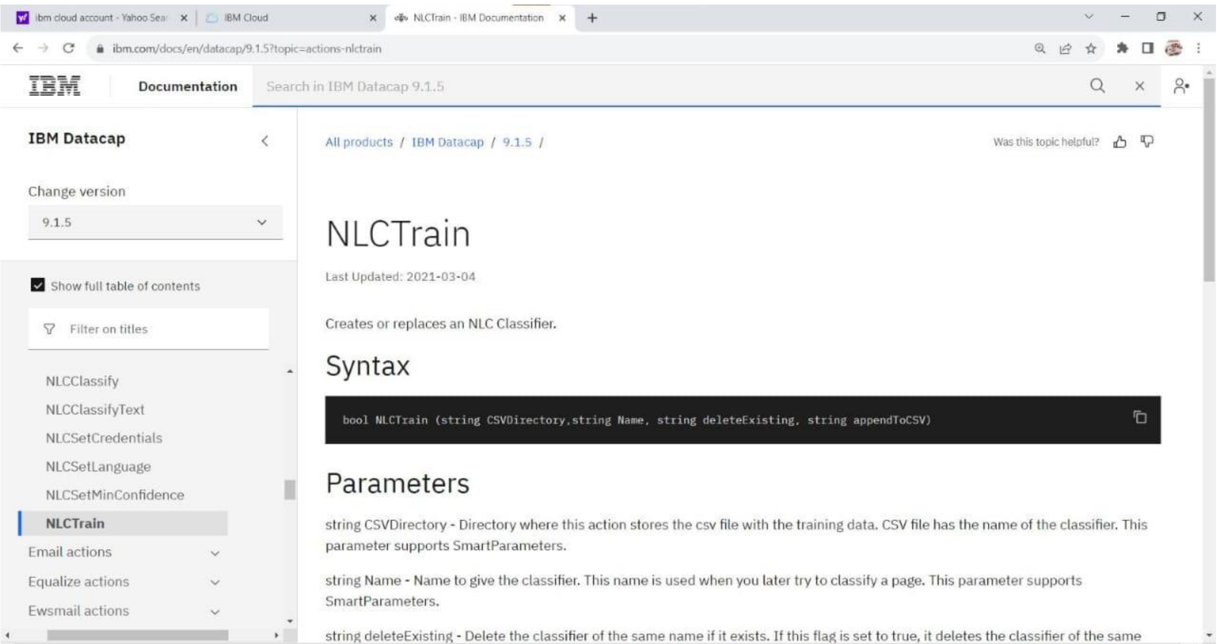
The **MinScore** can be a Smart Parameter. This action must be called before the Classify action.

Example

```
NLCSetLanguage("en")
NLCSetCredentials("@APPVAR(values/gen/NLCUserName)","@APPVAR(values/adv/NLCPassword)")
NLCSetMinConfidence(0.9)
Recognize()
NLCClassify("@APPVAR(values/gen/NLCClassifierName)")
```

NLCTrain

Creates or replaces an NLC Classifier.



NLCTrain

Last Updated: 2021-03-04

Creates or replaces an NLC Classifier.

Syntax

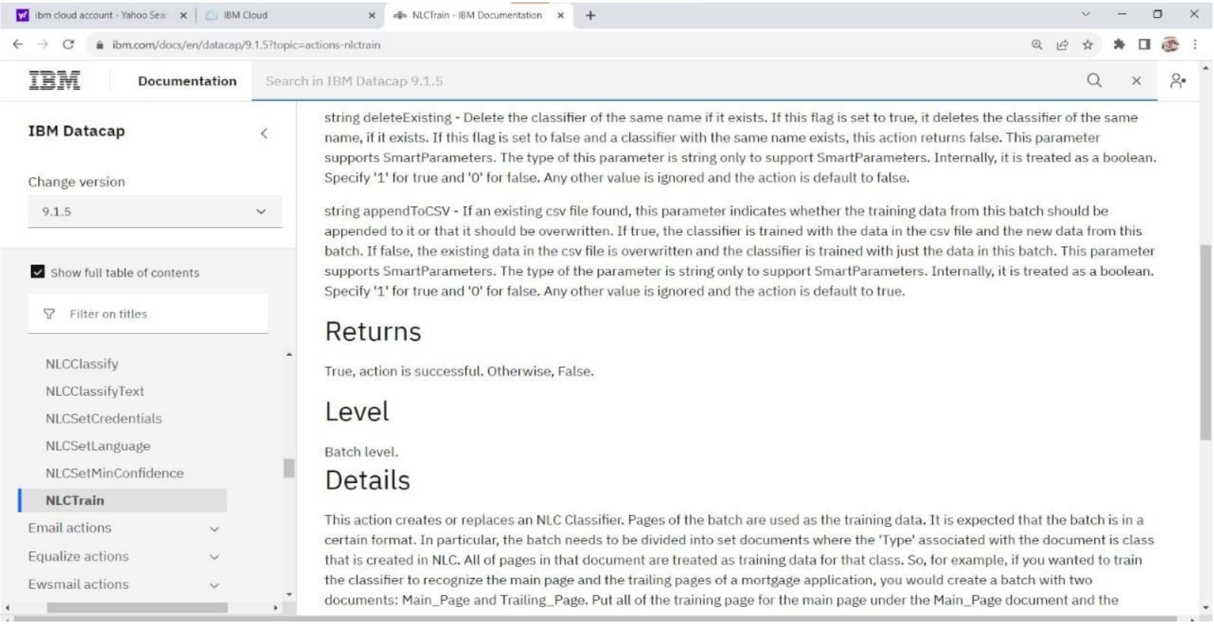
```
bool NLCTrain (string CSVDirectory,string Name, string deleteExisting, string appendToCSV)
```

Parameters

string CSVDirectory - Directory where this action stores the csv file with the training data. CSV file has the name of the classifier. This parameter supports SmartParameters.

string Name - Name to give the classifier. This name is used when you later try to classify a page. This parameter supports SmartParameters.

string deleteExisting - Delete the classifier of the same name if it exists. If this flag is set to true, it deletes the classifier of the same



string deleteExisting - Delete the classifier of the same name if it exists. If this flag is set to true, it deletes the classifier of the same name, if it exists. If this flag is set to false and a classifier with the same name exists, this action returns false. This parameter supports SmartParameters. The type of this parameter is string only to support SmartParameters. Internally, it is treated as a boolean. Specify '1' for true and '0' for false. Any other value is ignored and the action is default to false.

string appendToCSV - If an existing csv file found, this parameter indicates whether the training data from this batch should be appended to it or that it should be overwritten. If true, the classifier is trained with the data in the csv file and the new data from this batch. If false, the existing data in the csv file is overwritten and the classifier is trained with just the data in this batch. This parameter supports SmartParameters. The type of the parameter is string only to support SmartParameters. Internally, it is treated as a boolean. Specify '1' for true and '0' for false. Any other value is ignored and the action is default to true.

Returns

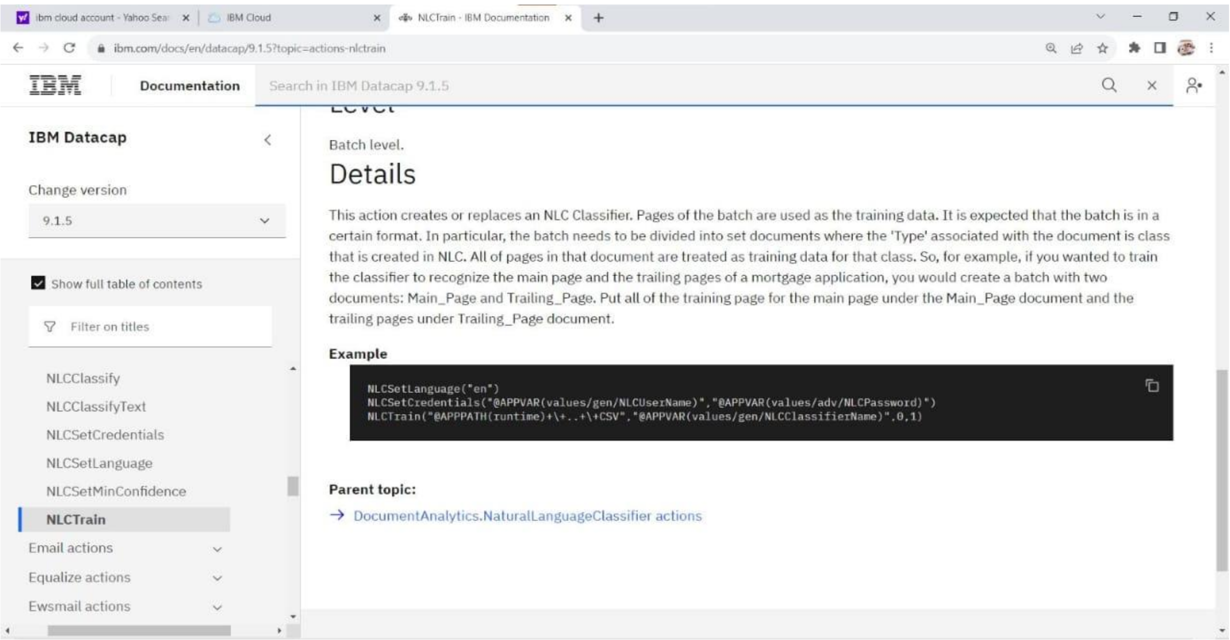
True, action is successful. Otherwise, False.

Level

Batch level.

Details

This action creates or replaces an NLC Classifier. Pages of the batch are used as the training data. It is expected that the batch is in a certain format. In particular, the batch needs to be divided into set documents where the 'Type' associated with the document is class that is created in NLC. All of pages in that document are treated as training data for that class. So, for example, if you wanted to train the classifier to recognize the main page and the trailing pages of a mortgage application, you would create a batch with two documents: Main_Page and Trailing_Page. Put all of the training page for the main page under the Main_Page document and the



Batch level.

Details

This action creates or replaces an NLC Classifier. Pages of the batch are used as the training data. It is expected that the batch is in a certain format. In particular, the batch needs to be divided into set documents where the 'Type' associated with the document is class that is created in NLC. All of pages in that document are treated as training data for that class. So, for example, if you wanted to train the classifier to recognize the main page and the trailing pages of a mortgage application, you would create a batch with two documents: Main_Page and Trailing_Page. Put all of the training page for the main page under the Main_Page document and the trailing pages under Trailing_Page document.

Example

```
NLCSetLanguage("en")
NLCSetCredentials("@APPVAR(values/gen/NLCUserName)","@APPVAR(values/adv/NLCPassword)")
NLCTrain("@APPPATH(runtime)+\+..+\+CSV","@APPVAR(values/gen/NLCClassifierName)",0,1)
```

Parent topic:

→ DocumentAnalytics.NaturalLanguageClassifier actions

CONCLUSION:

In conclusion, the integration of IBM Cloud Visual Recognition and AI-generated captions represents a significant step in advancing the capabilities of the image recognition system This includes creating an IBM Cloud account, setting up the Visual Recognition service, and obtaining the necessary API keys. Implementation of the image classification process with the IBM Cloud Visual Recognition API, have harnessed the power of cutting-edge computer vision technology. Additionally, incorporating natural language generation to create captions for recognized images has made the system more informative and user-friendly. This systematic approach will enable the successful implementation of the image recognition system. This seamless blend of visual and textual information enhances the overall user experience and opens doors to various applications in fields like content management, accessibility, and more.