

CAD – PHASE 4 ASSIGNMENT

DEVELOPMENT PHASE 2

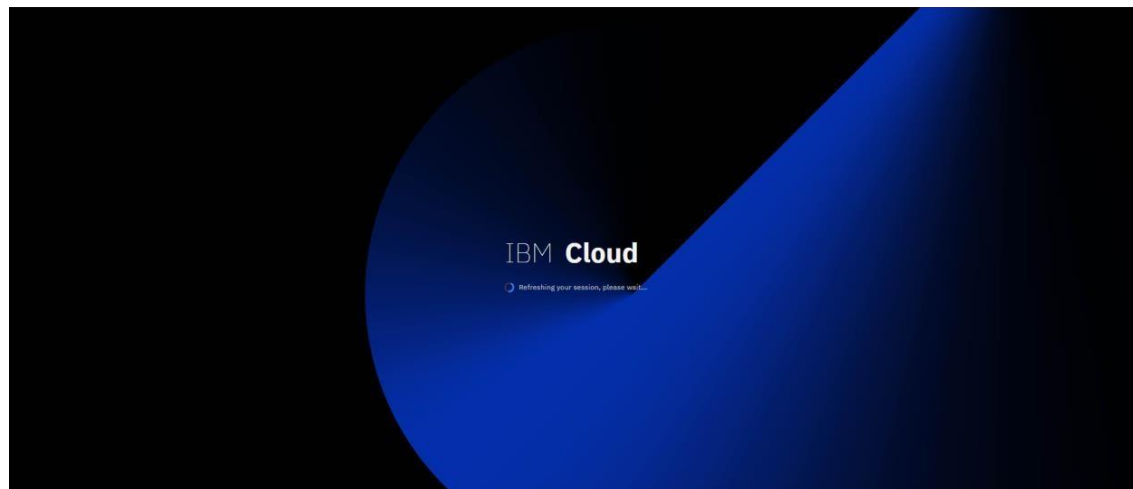
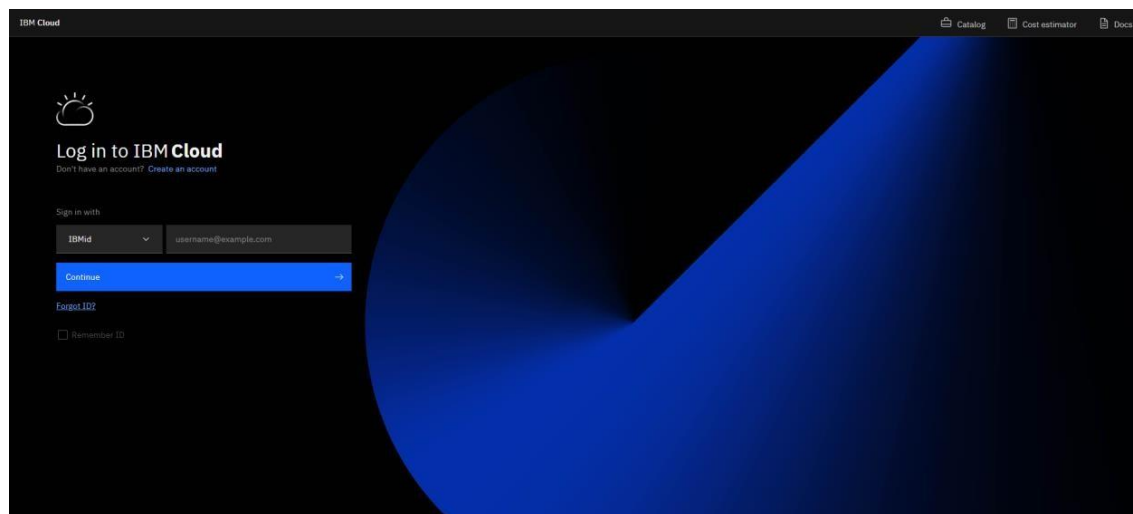
Design a simple web interface where users can upload images and view the AI-generated captions.

Use natural language generation to create captions for the recognized images.

Here are the step-by-step instructions to create a simple web interface for users to upload images and view AI-generated captions and create captions using NLP

Step 1: Create an IBM Cloud Account

Step 2: Log into IBM Cloud



Step 3: Set Up the Visual Recognition Service

- Once you are logged in, go to the IBM Cloud Dashboard.
- Click on "Create Resource" to create a new service.
- In the search bar, type "Visual Recognition" and select the "Visual Recognition" service from the catalog.
- Follow the prompts to create the service. You may need to choose a region and give your service a name.

Step 4: Obtain API Keys

Step 5: Design a Simple Web Interface

```
<!DOCTYPE html>
```

```
<html>
```

```
<head>
```

```
<title>Image Recognition</title>
```

```
</head>
```

```
<body>
```

```
<h1>Image Recognition</h1>
```

```
<input type="file" id="imageInput" accept="image/*" />
```

```
<button onclick="uploadImage()">Upload Image</button>
```

```
<div id="imageContainer"></div>
```

```
<div id="captionContainer"></div>
```

```
<script>    const apiKey =
```

```
'YOUR_API_KEY';    const apiUrl =
```

```
'YOUR_API_URL';
```

```
function uploadImage() {    const fileInput =
document.getElementById('imageInput');    const
imageContainer = document.getElementById('imageContainer');

    const captionContainer =
document.getElementById('captionContainer');

    if (fileInput.files.length > 0) {
const imageFile = fileInput.files[0];

    const formData = new FormData();
formData.append('images_file', imageFile);

    fetch(apiUrl + '/v3/classify?version=2022-01-01', {
method: 'POST',    headers: {
    'Authorization': 'Basic ' + btoa('apikey:' + apiKey)
    },
    body: formData
    })
    .then(response => response.json())
    .then(data => {
        // Display the uploaded image    const
imageUrl = URL.createObjectURL(imageFile);    const
imgElement = document.createElement('img');
imgElement.src = imageUrl;
```

```
imageContainer.innerHTML = ";
```

```
imageContainer.appendChild(imgElement);
```

```
        // Display the AI-generated captions
```

```
captionContainer.innerHTML = '<strong>AI-Generated  
Captions:</strong><br>';
```

```
        data.images[0].classifiers[0].classes.forEach(cls => {
```

```
            captionContainer.innerHTML += cls.class + ': ' + cls.score +  
'<br>';
```

```
        });
```

```
    })
```

```
    .catch(error => {
```

```
        console.error('Error:', error);
```

```
    });
```

```
    } else { alert('Please select an
```

```
image to upload.');
```

```
    }
```

```
    }
```

```
    </script>
```

```
</body>
```

```
</html>
```

Step 6: Integrate the Visual Recognition API

Resource list / Watson Studio-pq Active Add tags

Manage

Plan

Watson Studio in Cloud Pak for Data and watsonx

Build and deploy machine learning models on either platform. Work with foundation models on watsonx as a Service.

[Launch in](#)

Helpful links

Documentation

Learn about tools, features, and how to perform a wide variety of Data and AI tasks.

[Cloud Pak for Data](#) → [watsonx](#) →

Learning path

Start a step-by-step tutorial to get up and running quickly.

[Cloud Pak for Data](#) → [watsonx](#) →

Videos

Watch videos to learn about Watson Studio.

[Cloud Pak for Data](#) → [watsonx](#) →

How to use Watson Studio

Build, deploy, and trust AI models

Take a tutorial

Step through implementing a Data fabric use case in a sample project.

Quick start

- Build customer profiles with IBM Match SaaS with Watson
- Catalog and govern data with Watson Knowledge Catalog
- Build and manage ML models with Watson Studio
- Query data anywhere with Watson Query

What's new

Connect to more data sources in DataStage

Jul 27, 2023

Use a Satellite Connector to connect to an on-premise database

Jul 27, 2023

Build and manage ML models with Watson Studio

Watson Studio is a service that you use to build, deploy, and manage AI models and to optimize decisions. Work within a project to build models. Customize how you work by choosing from notebooks, graphical canvases, and no-code tools.

Get started

- Sample project**
Open a sample project with pre-built Watson Studio assets.
- New project**
Create a project and then add your own data to get started.

New in gallery

Mini_Daily_Temperatures

This dataset describes the maximum daily temperatures over 10 years (1981 - 1990) in the city Melbourne, Australia. The

[Google Chrome](#)

New project

Define details

Name

web interface - AI GENERATED CAPTIONS

Description (optional)

What's the purpose of this project?

Controls

☒ Restrict who can be a collaborator ⓘ

☐ Mark as sensitive ⓘ

Storage

Project includes integration with [Cloud Object Storage](#) for storing project assets.

Cloud Object Storage-rg

[Cancel](#) [Create](#)

General

Associated Service : watson-vision-combined-px

Overview

Test

Implementation

Filter

Threshold

0.0

0


1

Classes

☐ animal
☐ ash grey color
☐ ball
☐ blue
☐ bottle green color
☐ building
☐ car
☐ carnivore
☐ clothing
☐ clothing store
☐ cat


Clear results

animal2.jpg




giant panda	0.99
carnivore	0.99
mammal	0.99
animal	0.99
greenishess color	0.69
indigo color	0.35

ball.jpg



tennis ball	1.00
ball	1.00
bottle green color	0.88
lemon yellow color	0.80

billgates.jpg



ash grey color	0.94
person	0.70
decision maker	0.56
official	0.52
Secretary of the Interior	0.51
Treasury	0.50

Projects / Image Recognition / Loading...

General

Associated Service : watson-vision-combined-px

Overview

Test

Implementation

Filter

Threshold

0.0


0

1

Classes


☐ adult person
☐ animal
☒ ash grey color
☐ ball
☐ bar
☐ beige color
☐ Bengal tiger
☒ big cat
☐ blue
☐ bottle green color

Shoes1.jpg




ash grey color	0.99
foot pedal	0.84
lever	0.84
bar	0.84
sports equipment	0.80
clothing	0.78
footwear	0.70

tiger.jpg



animal	0.98
mammal	0.97
carnivore	0.97
feline	0.97
big cat	0.97
tiger	0.78
light brown color	0.75

Step 7: Create Natural Language understanding Account



Catalog /

Natural Language Understanding

Analyze text to extract meta-data from content such as concepts, entities, emotion, relations, sentiment and more.

Create

About

Select a location

London (eu-gb)

Select a pricing plan

Displayed prices do not include tax. Monthly prices shown are for country or location: [United States](#)

Plan	Features and capabilities	Pricing
Lite	30,000 NLU Items Per Month 1 Custom Model Fixed API Rate Limit. See Standard plan for higher API Rate Limit NOTE: A NLU item is based on the number of data units enriched and the number of enrichment features applied. A data unit is 10,000 characters or less. For example: extracting Entities and Sentiment from 15,000 characters of text is (2 Data Units * 2 Enrichment Features) = 4 NLU Items. A custom model refers to an annotation model developed with Watson Knowledge Studio.	Free
Standard	Unlimited NLU Items Per Month You will be charged per NLU Item You will be charged per Custom Model NOTE: A NLU item is based on the number of data units enriched and the number of enrichment features applied. A data unit is 10,000 characters or less. For example: extracting Entities and Sentiment from 15,000 characters of text is (2 Data Units * 2 Enrichment Features) = 4 NLU Items. NOTE: HIPAA Enabled in Washington DC (US-East) & Dallas (US-South) NOTE: EU HIPAA enabled available in Frankfurt (eu-gb)	Click to view tiers and pricing detail

Summary

Natural Language Understanding

Free

Location:

London

Plan:

Lite

Service name:

Natural Language Understanding:00

Resource group:

Default

☒ I have read and agree to the following license agreements:
[Terms](#)

Create

Add to estimate

Step 1: Analyze a webpage

Run the following command to analyze a webpage to get sentiment, concepts, categories, entities, and keywords.

```
$ curl -X POST -u "apikey:{apikey}" \
--header "Content-Type: application/json" \
--data '{
  "url": "http://newsroom.ibm.com/Guerbet-and-IBM-Watson-Health-Announce-Strategic
  "features": {
    "sentiment": {},
    "categories": {},
    "concepts": {},
    "entities": {},
    "keywords": {}
  }
}' \
"{url}/v1/analyze?version=2019-07-12"
```

Windows users: This command might not run on Windows. Run the following command instead:

```
$ curl -X POST -u "apikey:{apikey}" --header "Content-Type: application/json" --da
```

The next step demonstrates how to specify options that customize the analysis for each feature.

Step 2: Analyze target phrases and keywords

Natural Language Understanding can analyze target phrases in context of the surrounding text for focused sentiment and emotion results. The **targets** option for sentiment in the following example tells the service to search for the targets "apples", "oranges", and "broccoli". Since "apples" and "oranges" are located in the text, sentiment scores are returned for those targets.

You can also get sentiment and emotion results for entities and keywords that are detected in your text. In the example, the **emotion** option for keywords tells the service to analyze each detected keyword for emotion results.

```
$ curl -X POST -u "apikey:{apikey}" \
--header "Content-Type: application/json" \
--data '{
  "text": "I love apples! I do not like oranges.",
  "features": {
    "sentiment": {
      "targets": [
        "apples",
        "oranges",
        "broccoli"
      ]
    },
    "keywords": {
      "emotion": true
    }
  }
}' \
"{url}/v1/analyze?version=2019-07-12"
```

Credentials

Download ↓

Show credentials 🔗

API key:

.....



URL:

`https://api.eu-gb.natural-language-understanding.watson.cloud.ibm.com/instances/8a2bfbd...`



Step 7: Create Natural Language classifier Account

← View all

Natural Language Classifier

The Natural Language Classifier service applies cognitive computing techniques to return the best matching classes for a sentence or phrase. For example, you submit a question and the service returns keys to the best matching answers or next actions for your application. You create a classifier instance by providing a set of representative strings and a set of one or more correct classes for each training. After training, the new classifier can accept new questions or phrases and return the top matches with a probability value for each match.

IBM

View Docs

AUTHOR	IBM
PUBLISHED	11/21/2017
TYPE	Service
LOCATION	Sydney, United Kingdom, US South

Service name:

Natural Language Classifier-v1

Choose a region/location to deploy in:

US South

Choose an organization:

stevemar@ca.ibm.com

Choose a space:

dev

Features

- **SoftBank**
A localized version of this Watson service is available in Japan. Visit the following link for details: <http://www.softbank.jp/biz/watson>

Images

Click an image to enlarge and view screen captures, slides, or videos. Screen caps show the user interface for the service after it has been provisioned.

Training dataset

```
weather_data_train.csv
1 How hot is it today?,temperature
2 Is it hot outside?,temperature
3 Will it be uncomfortably hot?,temperature
4 Will it be sweltering?,temperature
5 How cold is it today?,temperature
6 Is it cold outside?,temperature
7 Will it be uncomfortably cold?,temperature
8 Will it be frigid?,temperature
9 What is the expected high for today?,temperature
10 What is the expected temperature?,temperature
11 Will high temperatures be dangerous?,temperature
12 Is it dangerously cold?,temperature
13 When will the heat subside?,temperature
14 Is it hot?,temperature
15 Is it cold?,temperature
16 How cold is it now?,temperature
17 Will we have a cold day today?,temperature
18 When will the cold subside?,temperature
19 What highs are we expecting?,temperature
20 What lows are we expecting?,temperature
21 Is it warm?,temperature
22 Is it chilly?,temperature
23 What's the current temp in Celsius?,temperature
24 What is the temperature in Fahrenheit?,temperature
25 Is it windy?,conditions
```