Final Project Documentation- Azure computer vision API

ITIS 6177 System Integration

By- Saumitra Apte (801202857)

- **Computer vision API Information**

  For this project, I have used The **Optical Character Recognition** (OCR) service which is used to extract text from images. These images can include handwritten text, posters, business cards, whiteboards. It provides analysis in terms of lines, words, language, style(handwritten/other) and angle(orientation of text). Supported image formats are JPEG, PNG, BMP, PDF and TIFF. Image url can be provided or it can be uploaded. As I have used free tier, image size must be less than 4MB. Image dimension should be at least 50*50 pixels and at most 10000 x 10000 pixels.

- **Project Technology and scope**

  - Application has been developed using **express-js** and API is developed using **axios** which calls the azure API. It has been hosted on Digital Ocean server.
  - For this application, image can be provided as a **URL**. It can be tested both using Postman and UI.
  - Entire functionality contains 2 Api requests. First, Post request is sent to upload image for analysis. In response, we receive 'apim-request-id' which is used for 'GET' request to get text analysis.
  - From Postman, you can send image URL from body. After receiving response, you can send a GET request using 'apim-request-id' which you can get from 'form action'
  - in UI- Image url can be pasted in textbox, after clicking on submit button, if response is successful, 'extract text' button will be shown. After clicking that button, you will be able to see the lines(containing text) in the image.
  - As the subscription for azure is free tier- **only 20 calls per minute** can be handled.

- **Error handling:**

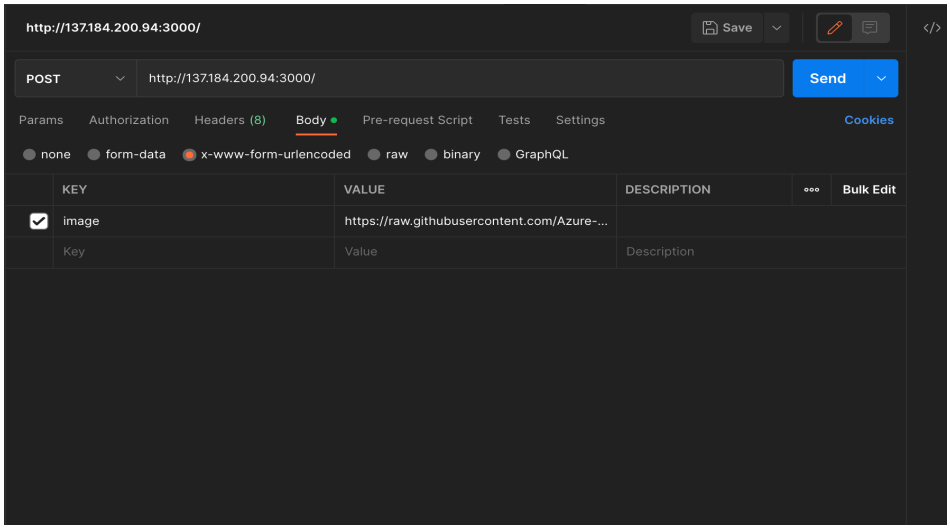
  1) For Post request, azure has in-built error handling with below status codes and messages
     a. 400 : Bad or unrecognizable request JSON or binary file/Image format unsupported. Supported formats include JPEG, PNG, BMP, PDF and TIFF.
     b. 415: Unsupported media type. 'Content-Type' does not match the content of the POST request.
     c. 500: Internal server error.
     d. 503 if transient faults occurred when dealing with Microsoft Azure storage services.

  POST requests errors can be little hard to understand for non-technical users, hence I have given combined error message to all 400 errors as - "This image file may not be supported due to incorrect media format or size, please try with new image"

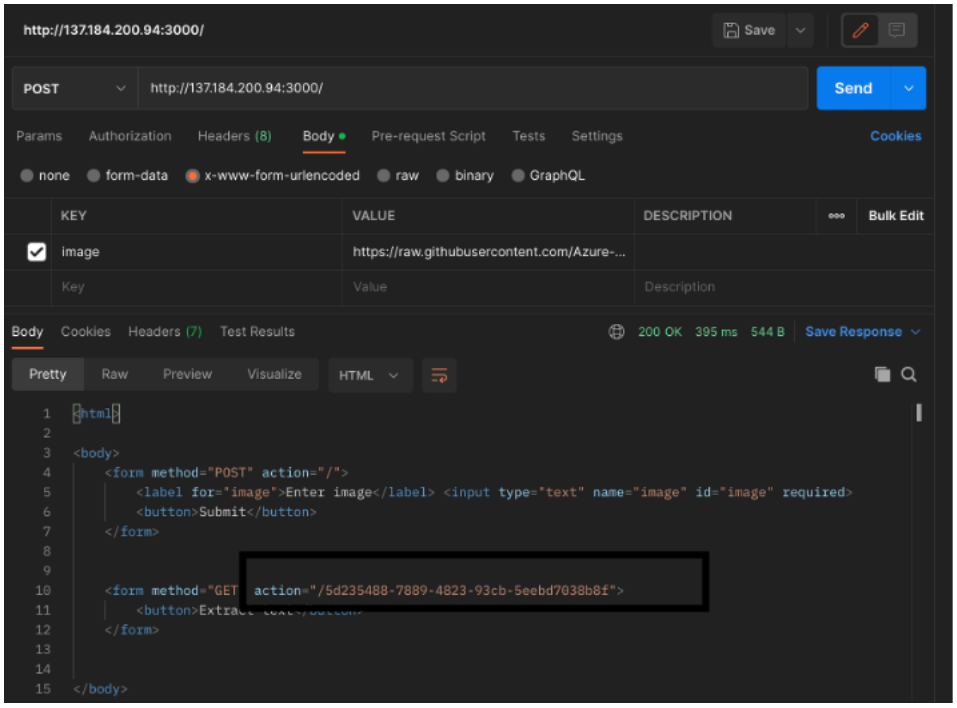
  2) For GET request:
     a. 404: Operation ID is invalid or expired.
     b. 500: Internal server error.

- **How-to-use API using Postman with screenshots.**

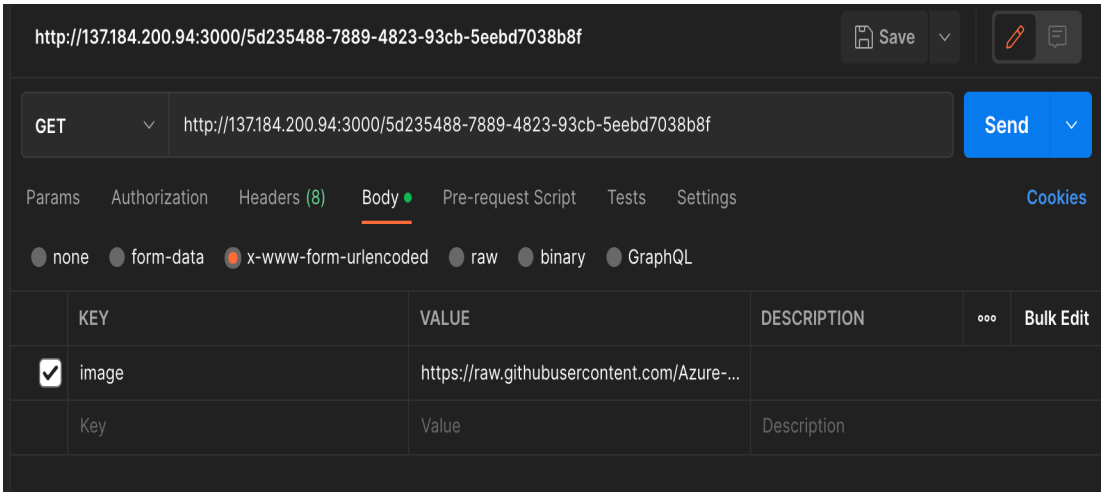
1) Copy the url of the application http://137.184.200.94:3000/ in Postman. Select the post request. In body, select x-www-form-urlencoded, add image as key and in value – image url can be copied. Click on send. Ex url: Ex- https://raw.githubusercontent.com/Azure-Samples/cognitive-services-sample-data-files/master/ComputerVision/Images/printed_text.jpg



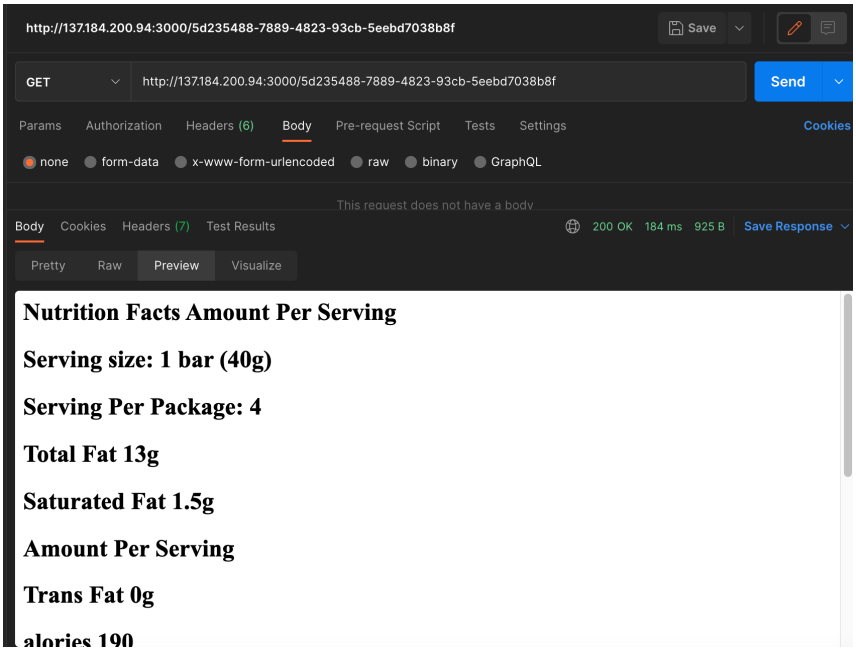
2) If Image is supported, you will see 200 response as below. You can get the ID which will required for GET request in 'action' inside form in response body.



3) Change the request type to GET and copy the ID in http://137.184.200.94:3000/:id format as below

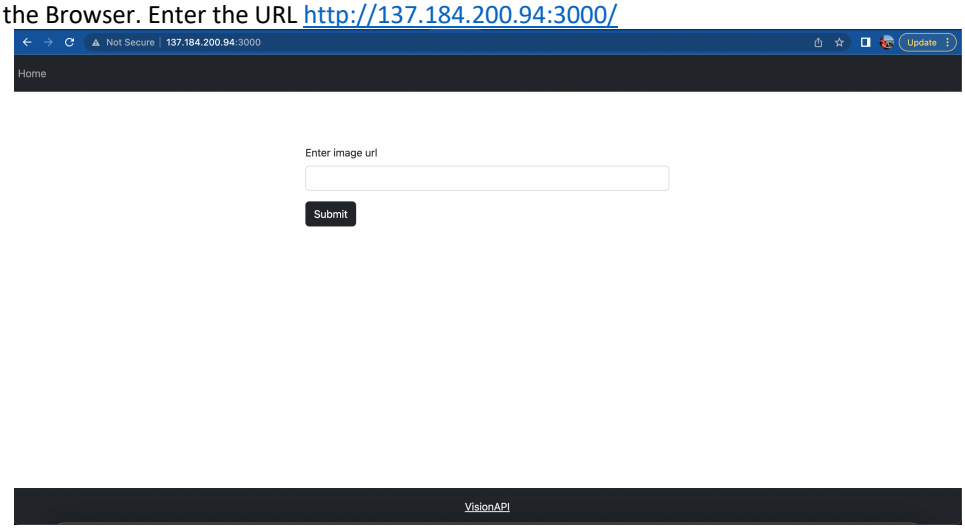


4) If the response is 200, you will be able to see the text analysis as below



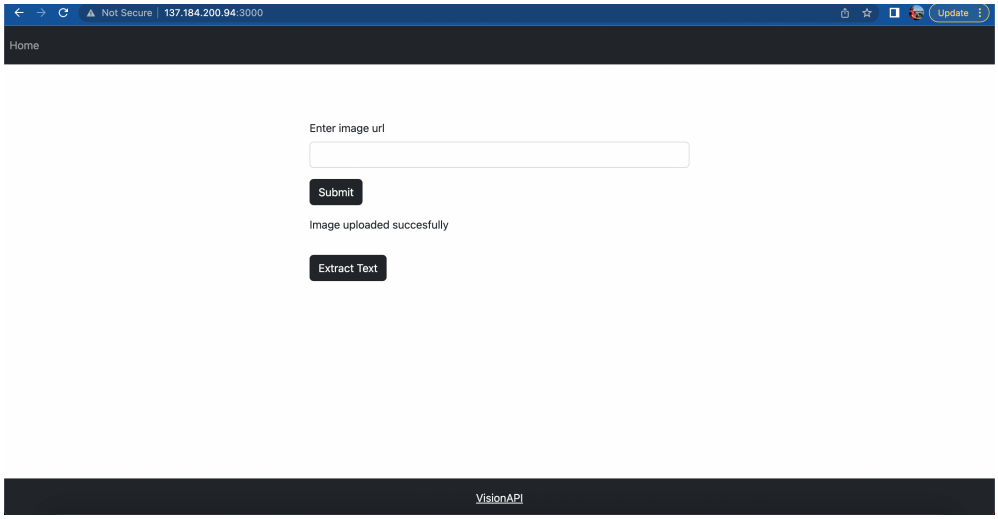
- **How to test application using UI**-

1) Go the Browser. Enter the URL http://137.184.200.94:3000/

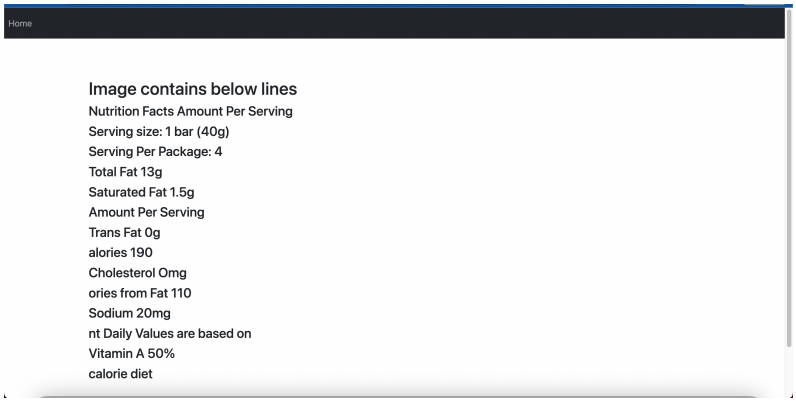


2) Enter the url in text box. Click on Submit button. Ex- https://raw.githubusercontent.com/Azure-Samples/cognitive-services-sample-data-files/master/ComputerVision/Images/printed_text.jpg

   If request is successful, you will get output as below.



3) Click on Extract Text button. If request is successful, you will get output as below.



4) Below are the few example Image links which works.

1) https://raw.githubusercontent.com/Azure-Samples/cognitive-services-sample-data-files/master/ComputerVision/Images/printed_text.jpg

2) https://cdn.europosters.eu/image/750/posters/rocky-main-poster-i119986.jpg

3) https://onlinetexttools.com/images/examples-onlinetexttools/letter-to-santa-claus.png

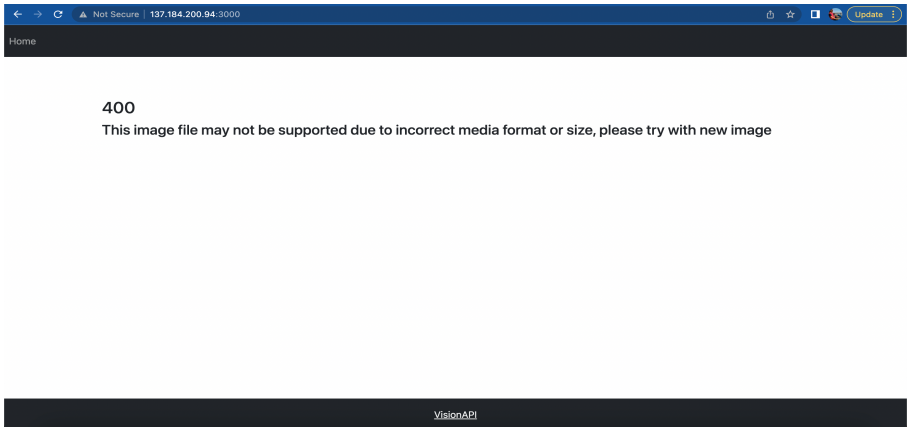
4) https://www.digitalprinting.co.uk/media/images/products/slides/2/business-cards-1.jpg

5) https://www.shutterstock.com/image-photo/spices-on-white-background-sample-600w-77466610.jpg

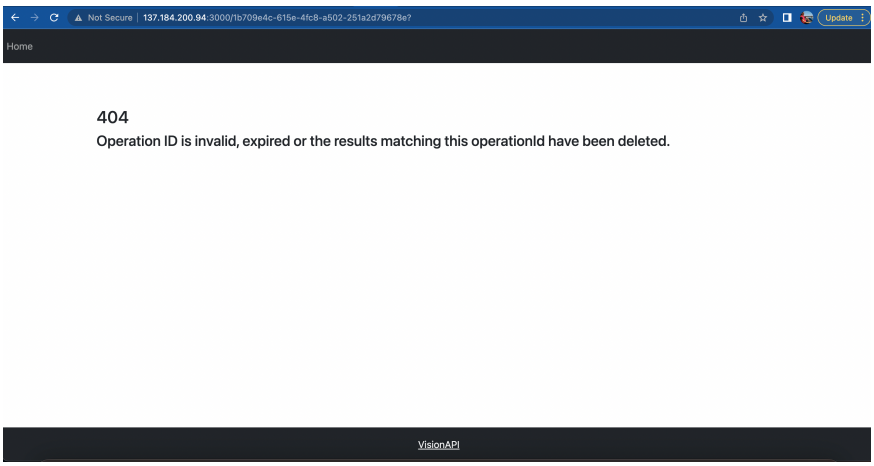
Below are the few example Image links which doesn't work due to bad format/size issues.

https://www.researchgate.net/profile/Neeta-Nain/publication/299666231/figure/fig1/AS:491693964304386@1494240384780/Example-image-of-a-general-handwritten-text-paragraph-from-IAM-dataset-4.png

5) If Image has any issues, after post request (Clicking on submit button), there will be error message as below.



6) If we try to get image analysis for incorrect ID (which is not operation ID) or expired operation ID, there will be error message as below.



- **How to run application locally**

1) Clone the repository https://github.com/Saumitra07/ITIS6177_finalProject.git

2) Create Azure account and subscribe for azure computer vision API to get the subscription key.

3) Create .env file and copy your subscription key in that file.

4) run - npm install

5) run - node app.js