

API Documentations

Contact Information

TEAM MEMBER 1:

Name: Adina Nibijiang

Email: adina.n@northeastern.edu

TEAM MEMBER 2:

Name: Zifeng Jiang

Email: jiang.zif@northeastern.edu

Dataset Insights

This dataset has 231723 JPG format image files.

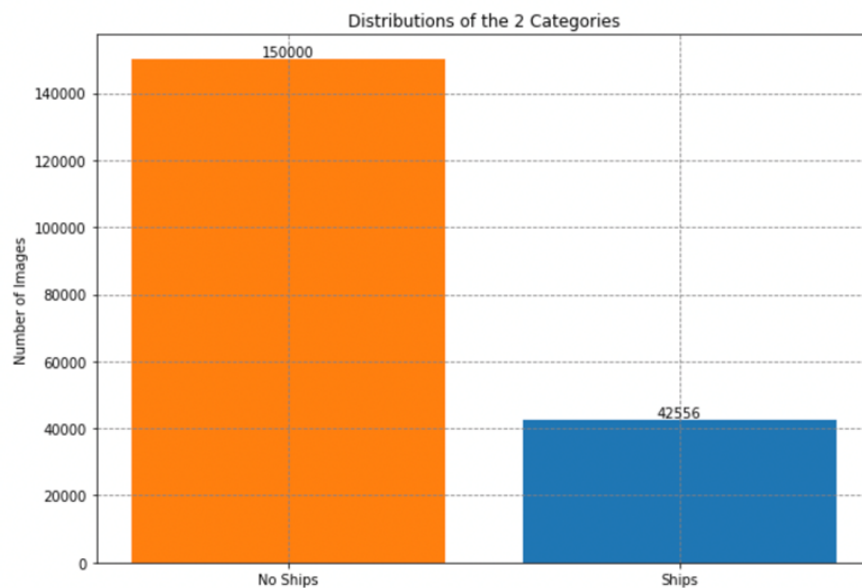
The dataset provides the ground truth (in run-length encoding format) for the images.

	ImageId	EncodedPixels
0	00003e153.jpg	NaN
1	0001124c7.jpg	NaN
2	000155de5.jpg	264661 17 265429 33 266197 33 266965 33 267733...
3	000194a2d.jpg	360486 1 361252 4 362019 5 362785 8 363552 10 ...

No. of images with ships: 42556

No. of images with no ships: 150000

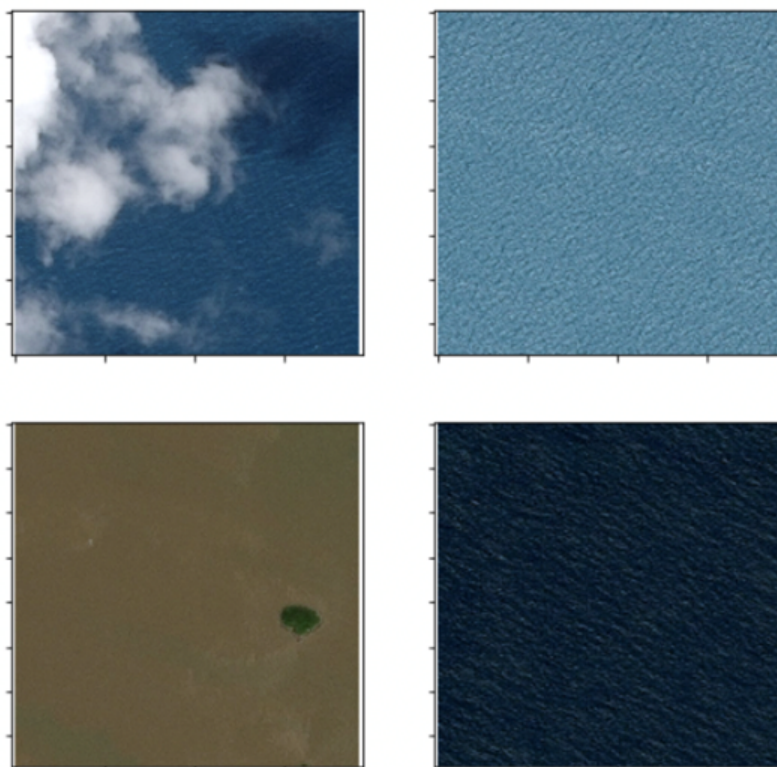
The bar plot are as follows:



The size of the dataset is about 27 GB.
Sample image with ship:



Sample image without ship:



API Functions:

Function 1: Get Image and Masks


Function Name: `img_and_masks`

Purpose	This function's purpose is to find out the image numpy array and the mask array.
URL	https://airbus-detection-data-services.herokuapp.com/image_and_masks
Input	Any image file name in the dataset
Output	The numpy array and mask array of this image
Error Handling	If the name of the image file is invalid, return "No such file name! Please enter a valid image name!"

Examples:

Input: 000155de5.jpg

Output:


image.png required

Responses

Curl

```
curl -X 'GET' \
  http://127.0.0.1:8000/image_and_masks/000155de5.jpg' \
  -H 'accept: application/json'
```

Request URL

http://127.0.0.1:8000/image_and_masks/000155de5.jpg

Server response

Code	Details
200	<p>Response body</p> <pre>{ "Image Pixel Array": "[[[[62 88 100] \\n [61 82 90] \\n [58 79 96] \\n ... \\n [58 85 100] \\n [62 90 100] \\n [63 91 100] \\n] \\n [[59 88 97] \\n [59 88 97] \\n [58 79 96] \\n ... \\n [62 90 100] \\n [64 92 100] \\n [63 91 100] \\n] \\n [[58 79 96] \\n [58 79 96] \\n [60 81 98] \\n ... \\n [61 89 100] \\n [60 88 100] \\n] \\n ... \\n [[65 91 100] \\n [74 100 117] \\n [81 107 126] \\n ... \\n [63 89 104] \\n [72 102 113] \\n [77 107 118] \\n] \\n [[58 82 99] \\n [63 81 100] \\n [70 96 113] \\n ... \\n [57 87 98] \\n [68 96 107] \\n [73 102 113] \\n] \\n [[81 78 93] \\n [58 88 100] \\n ... \\n [62 89 100] \\n [67 87 98] \\n [68 96 100]]]", "Image Mask Array": "[[[0. 0. 0. ... 0. 0. 0.] \\n [0. 0. 0. ... 0. 0. 0.] \\n [0. 0. 0. ... 0. 0. 0.] \\n [0. 0. 0. ... 0. 0. 0.] \\n [0. 0. 0. ... 0. 0. 0.] \\n [0. 0. 0. ... 0. 0. 0.]]]" }</pre> <div> <input type="button" value="Download"/> </div>

Response headers

```
content-length: 886
content-type: application/json
date: Fri, 24 Jun 2022 22:17:37 GMT
server: waitress
```

Input: 123

Output:

imageid required

string

(path)

123

Execute

Clear

Responses

Curl

```
curl -X 'GET' \
  'http://127.0.0.1:8000/image_and_masks/123' \
  -H 'accept: application/json'
```

Request URL

```
http://127.0.0.1:8000/image_and_masks/123
```

Server response

Code

Details

200

Response body

```
{
  "error_messages": "No such key! Please enter a valid image name!"
}
```

Download

Response headers

```
content-length: 68
content-type: application/json
date: Fri, 14 Jun 2022 22:18:53 GMT
server: uapora
```

Function 2: Get Run Length Decode

Function Name: `rle_decode`

Purpose	This function's purpose is to decode the run length encode.
URL	https://airbus-detection-data-services.herokuapp.com/run_length_decode
Input	Run length encoded pixels data
Output	The numpy array of the mask image
Error Handling	"Error Messages: ": "The input run-length string cannot be decode"

Examples:

Input: 477152 1 477919 3 478686 5 479453 7 480222 7 480991 7 481760 7 482530 6
483299 4 484068 3 484837 1

Output:

mask_rle required
string
(path)

477152 1 477919 3 478686 5 479453 7 480222 7 480991 7 481760 7 482530 6 483299 4 484068 3 484837 1

ExecuteClear

Responses

Curl

curl -X 'GET' \n'http://127.0.0.1:8000/run_length_decode/47715214779193478686547945374802227480991748176074825306483299448406834848371'\n-H 'accept: application/json'

Request URL

http://127.0.0.1:8000/run_length_decode/47715214779193478686547945374802227480991748176074825306483299448406834848371

Server response

Code

Details

200

Response body

{\n "Image Pixel Array": "[[0 0 0 ... 0 0 0]n [0 0 0 ... 0 0 0]n [0 0 0 ... 0 0 0]n ...n [0 0 0 ... 0 0 0]n [0 0 0 ... 0 0 0]]"\n}

Download

Response headers

content-length: 151\ncontent-type: application/json\ndate: Fri, 24 Jun 2022 12:12:14 GMT\nserver: uvicorn

Input: abc

Output:

mask_rle required
string
(path)

abc

ExecuteClear

Responses

Curl

curl -X 'GET' \n'http://127.0.0.1:8000/run_length_decode/abc'\n-H 'accept: application/json'

Request URL

http://127.0.0.1:8000/run_length_decode/abc

Server response

Code

Details

200

Response body

{\n "Error Messages: ": "The input run-length string cannot be decode"\n}

Download

Response headers

content-length: 47\ncontent-type: application/json\ndate: Fri, 24 Jun 2022 12:12:59 GMT\nserver: uvicorn

Function 3: Get ship and non-ship image

Function Name: search_ship

Purpose	This function's purpose is to return an image array with or without a ship.
URL	https://airbus-detection-data-services.herokuapp.com/ship_nonship_image
Input	'ship' or 'noship'
Output	The array for the image with or without ship correspondingly
Error Handling	"Error Messages: ": "No such file name! Please enter a valid image name!"

Examples:

Input: ship

Output:

required

string

(path)

ship

Execute

Clear

Responses

Curl

curl -X 'GET' \n'http://127.0.0.1:8000/ship_nonship_image/ship' \n-H 'accept: application/json'

Request URL

http://127.0.0.1:8000/ship_nonship_image/ship

Server response

Code

Details

200

Response body

{\n "Image Pixel Array": "[[[[2 28 49]\n [10 31 52]\n [13 36 55]\n ...]\n [17 39 62]\n [16 38 61]\n [15 37 60]]]\n [[7 28 49]\n [9 30 51]\n [9 31 52]\n ...]\n [21 43 64]\n [19 41 6\n 43]\n [17 39 62]]]\n [[9 30 51]\n [9 30 51]\n [7 29 50]\n ...]\n [21 43 64]\n [20 41 64]\n [15 37 60]]]\n ...]\n [[9 31 52]\n [9 31 52]\n [11 33 54]\n ...]\n [14 37 53]]]\n [13 36\n 52]\n [17 40 56]]]\n [[5 27 48]\n [5 27 48]\n [7 29 50]\n ...]\n [16 39 55]\n [13 36 52]\n [15 38 54]]]\n [[7 29 50]\n [6 28 49]\n [8 30 51]\n ...]\n [13 36 52]\n [11 36 52]]]\n [14 37 53]]]"

Response headers

content-length: 595\ncontent-type: application/json\ndate: Fri, 24 Jun 2022 22:25:20 GMT\nserver: uvicorn

Download

Input: 123

Output:

required

string

(path)

123

Execute

Clear

Responses

Curl

curl -X 'GET' \n'http://127.0.0.1:8000/ship_nonship_image/123' \n-H 'accept: application/json'

Request URL

http://127.0.0.1:8000/ship_nonship_image/123

Server response

Code

Details

200

Response body

{\n "Error Messages: ": "Please type in 'ship' or 'noship'."

Download

Response headers

content-length: 57\ncontent-type: application/json\ndate: Fri, 24 Jun 2022 22:26:15 GMT\nserver: uvicorn

Function 4: Get the Number of images that has certain number of ships

Function Name: image_num_ships

Purpose	This function's purpose is to find out how many images in our dataset has certain number of ships.
URL	https://airbus-detection-data-services.herokuapp.com/image_number_of_ships
Input	An integer number
Output	How many images in our dataset has this certain number of ships
Error Handling	"Error Messages: ": "Error! " + str(num) + " is not an integer between 0-" + str(m) + "."

Examples:

Input: 6

Output:

num * required
integer
(path)

6

Execute

Clear

Responses

Curl

curl -X 'GET' \n 'http://127.0.0.1:8000/image_number_of_ships/6' \n -H 'accept: application/json'

Request URL

http://127.0.0.1:8000/image_number_of_ships/6

Server response

Code

Details

200

Response body

{\n "Number of Images: ": 657\n}

Response headers

content-length: 26\ncontent-type: application/json\ndate: Fri,26 Jun 2022 22:32:35 GMT\nserver: uvicorn

Download

Input: 25

Output:

num * required
integer
(path)

25

Execute

Clear

Responses

Curl

curl -X 'GET' \n 'http://127.0.0.1:8000/image_number_of_ships/25' \n -H 'accept: application/json'

Request URL

http://127.0.0.1:8000/image_number_of_ships/25

Server response

Code

Details

200

Response body

{\n "Error Messages: ": "Error! 25 is not an integer between 0-15."\n}

Response headers

content-length: 64\ncontent-type: application/json\ndate: Fri,24 Jun 2022 22:33:09 GMT\nserver: uvicorn

Download

Function 5: Get the number of ships in a certain image

Function Name: num_ship_in_image

Purpose	This function's purpose is to find out the num of ship(s) in an image.
URL	https://airbus-detection-data-services.herokuapp.com/num_ship_image
Input	Any image file name in the dataset
Output	How many ships are there in this image.
Error Handling	If the name of the image file is invalid, return "No such file name! Please enter a valid image name!"

Examples:

Input: 0a2e15e29.jpg

Output:

The screenshot shows a REST client interface with the following details:

- Input:** A text field containing "0a2e15e29.jpg".
- Buttons:** "Execute" (highlighted in blue) and "Clear".
- Responses:**
 - Curl:**

```
curl -X 'GET' \
  'http://127.0.0.1:8000/num_ship_image/0a2e15e29.jpg' \
  -H 'accept: application/json'
```
 - Request URL:** `http://127.0.0.1:8000/num_ship_image/0a2e15e29.jpg`
 - Server response:**
 - Code:** 200
 - Response body:**

```
{
  "The number of ships in this image is: ": 0
}
```
 - Response headers:**

```
content-length: 44
content-type: application/json
date: Fri, 24 Jun 2022 22:42:25 GMT
server: uvicorn
```

Input: 123

Output:

The screenshot shows a REST client interface with the following details:

- Input:** A text field containing "123".
- Buttons:** "Execute" (highlighted in blue) and "Clear".
- Responses:**
 - Curl:**

```
curl -X 'GET' \
  'http://127.0.0.1:8000/num_ship_image/123' \
  -H 'accept: application/json'
```
 - Request URL:** `http://127.0.0.1:8000/num_ship_image/123`
 - Server response:**
 - Code:** 200
 - Response body:**

```
{
  "Error Messages: ": "No such key! Please enter a valid image name!"
}
```
 - Response headers:**

```
content-length: 68
content-type: application/json
date: Fri, 24 Jun 2022 22:43:03 GMT
server: uvicorn
```