API Endpoint: https://dentifyxbe.azurewebsites.net **OR** <your-backend-endpoint>
Database: https://cloud.mongodb.com/v2/63d4ec4c1e74d747d5194def#/clusters **OR** <your-mongodb-atlas-endpoint>

/login

<all users>

Header:
Content-Type: application/json

POST

Fields:
Email (required)
Password (required)

Request Example:

```
{
        "Email": "dentifyX@mail.com",
        "Password": "admin123"
}
```

Response Example:

```
{
        "message": "login successfully",
        “role_id”: 1,
        "token":
"eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJ1c2VyX2lkIjoiNjQwMGQ0YzlhNzcyODNhNDc
xMTc4NWFlIiwicm9sZV9pZCI6MCwiZXhwIjoxNjc3ODUxMzMwfQ.hFVtr7L0ryDsJORk20uCh
rRMAjAB4C4v7kArK_5NQjE"
}, 200
```

/users

<Admin only>

Header:
Authorization: <jwt_token>
Content-Type: application/json

POST

For create a user

Fields:
FirstName (required)
LastName (required)
RoleID (required)
Email (required) <something@something.something>
Password (required) <must contain at least 8 characters 1 alphabet and 1 number >
ProficiencyID (required)
JobPosition (required)

Request Example:
```
{
	"FirstName": "DentifyX",
	"LastName": "Admin",
	"RoleID": 0,
	"Email": "dentifyX@mail.com",
	"Password": "admin123",
	"ProficiencyID": 0
}
```
Response Example:
```
{
	"message": "new user successfully created"
}, 201
```

PUT

Update user data by ID

Fields:

SelectedID (required) mongodb json-query contain ID(s)***
UpdatedField (required) json object of field(s) to update

Request Example:

```
{
	"SelectedID": {
		"_id": {
			"$in": [
				{
					"$oid": "63f785ac4703441b1e2c477e"
				},
				{
					"$oid": "63fe423a5897c506a2b237be"
				}
			]
		}
	},
	"UpdatedField": {
		"ProficiencyID": 2
	}
}
```

Response Example:

```
{
	"message": "2 matched, successfully update 2 items"
}, 200
```

DELETE

Delete user data by ID

Fields:
“**mongodb query-json**” of ID(s)

Request Example:

```
{
	"_id": {
		"$oid": "63f787653bb5cee04fdd0b15"
	}
}
```

Response Example:

```
{
	"message": "1 documents deleted"
}, 200
```

/query/users

POST

Read user data

Fields:

Use “**mongodb query-json**” format read more
(Usually contains field(s) in POST method but with some additional fields for query)

Request Example (view more examples):

```
{}
```

Response Example:

```
{
	"found_results": 5,
	"query_results": [
		{
			"Email": "john.smith@mail.com",
			"FirstName": "john",
			"LastName": "smith",
			"ProficiencyID": 3,
			"RoleID": 0,
			"_id": {
				"$oid": "63fe423a5897c506a2b237be"
			}
		},
		…
	]
}, 200
```

/users/<id>

<Admin only>

NOTE: param route have higher priority than regular json route

Header:
Authorization: <jwt_token>

GET

Read a user data by ID

NOTE: use **/users/*** to quickly get all users

Request Example:

/users/63fe423a5897c506a2b237be

Response Example:

```
{
        "found_results": 1,
        "query_results": [
                {
                        "Email": "john.smith@mail.com",
                        "FirstName": "john",
                        "LastName": "smith",
                        "ProficiencyID": 3,
                        "RoleID": 0,
                        "_id": {
                                "$oid": "63fe423a5897c506a2b237be"
                        }
                }
        ]
}, 200
```

PUT

Update a user data by ID

NOTE: only PUT do require “Content-Type: application/json” in Header

Fields:

JSON object of field(s) to update

Request Example:

/users/63fe423a5897c506a2b237be

Body:

```
{
	"ProficiencyID": 3
}
```

Response Example:

```
{
	"message": "1 matched, successfully update 1 items"
}, 200
```

DELETE

Delete user data by ID

Request Example:

/users/63fe423a5897c506a2b237be

Response Example:

```
{
	"message": "1 documents deleted"
}, 200
```

/user

<all users>

Self modify route

Header:
Authorization: <jwt_token>

GET

Read a user data by ID

Fields:
Use “**mongodb query-json**” format read more
(Usually contains field(s) in POST method but with some additional fields for query)

Request Example:

/user

Response Example:

```
{
        "found_results": 1,
        "query_results": [
                {
                        "Email": "john.smith@mail.com",
                        "FirstName": "john",
                        "LastName": "smith",
                        "ProficiencyID": 3,
                        "RoleID": 0,
                        "_id": {
                                "$oid": "63fe423a5897c506a2b237be"
                        }
                }
        ]
}, 200
```

PUT

Update a user data by ID

NOTE: only PUT do require “Content-Type: application/json” in Header

Fields:

JSON object of field(s) to update

Request Example:

/user

Body:

```
{
	"ProficiencyID": 3
}
```

Response Example:

```
{
	"message": "1 matched, successfully update 1 items"
}, 200
```

/user/check_password

<all users>

Header:
Authorization: <jwt_token>

POST

Check current password

Fields:
Password (required) <must contain at least 8 characters 1 alphabet and 1 number >

Request Example:

/user/check_password

Body:

```
{
	"Password": admin123
}
```

Response Example:

```
{
	"current_password": true
}, 200
```

Mongodb query json examples

Find all

```
{}
```

Find one

```
{
        "_id": {
                {
                        "$oid": "63f785ac4703441b1e2c477e"
                }
        }
}
```

Find selected

```
{
        "_id" : {
                "$in" : [
                        {
                                "$oid": "63f785ac4703441b1e2c477e"
                        },
                        {
                                "$oid": "63fe423a5897c506a2b237be"
                        }
                ]
        }
}
```

Read more

/ml/predict

<all users>

Header:

Authorization: <jwt_token>
Content-Type: application/json

POST

Fields:

B64Image (required)

Single string of Base 64 image.

InitialFilter

Default: True

Enable ResNet filter before detecting bbox by RetinaNet.

(If False, disable the filter.)

NoResize

Default: False

Resize image when performing detection task.

(If False, ImageMinSide and ImageMaxSide will be ignored.)

ImageMinSide

Default: 800

In the detection process, resize the minimum side of the image to the ‘ImageMinSide’ value.

ImageMaxSide

Default: 1333

In the detection process, resize the maximum side of the image to the ‘ImageMaxSide’ value.

ScoreThreshold

Default: 0.05

Bounding boxes with scores below this value will be filtered out.

MaxDetections

Default: 3

Maximum detection “per side” of the image.

(Each image will be separated into 2 sides. So if MaxDetections = 3, all detections = 6.)

FilterVerticalOutlierBox

Default: False

Filter any bounding boxes that are located within “VerticalOffset”.

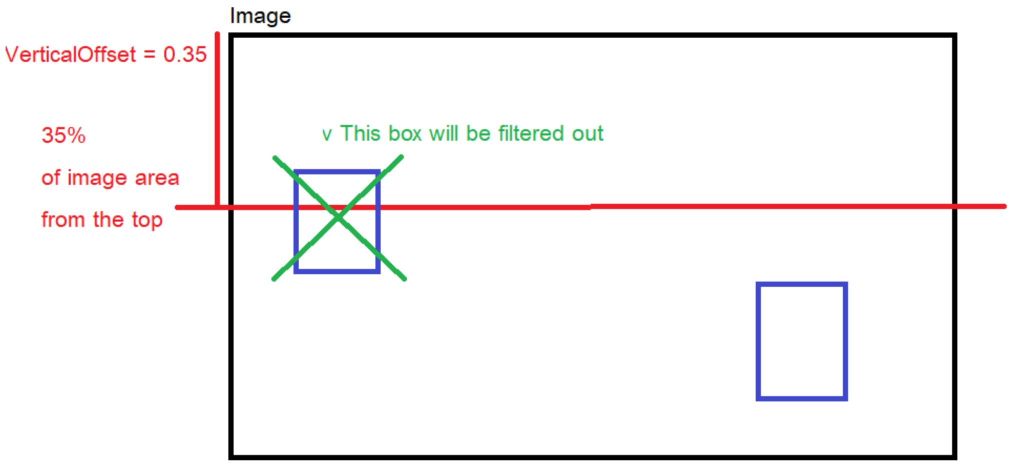
(If False, VerticalOffset will be ignored.)

VerticalOffset

Default: 0.35

Percentage of the image area from the top image.

Note: FilterVerticalOutlierBox and VerticalOffset are for filtering the bounding boxes that are located too high from the region of the image we want. as shown in the image below



BestOnly ***

Default: True

Select only the bounding box with highest detection score to classify and return the result. (Highly recommended to keep the default value to reduce workload of the vision transformer model)

If Ture, will return the image with the bounding boxes drawed.

If False, all parameters below will be ignored.

BGRColors

Default: [[255, 0, 0], [0, 0, 255]]

An array contains another two arrays of 3 integers (each integer ranging between 0 and 255) to represent the Blue Green and Red (BGR) color values.

BBoxThickness

Default: 6

Thickness of the bounding boxes

DrawClass

Default: True

If True, Draw the label on the bounding boxes.

If False, all parameters below will be ignored.

FontThickness

Default: 4

Thickness of the font.

FontScale

Default: 1.5

Scale of the font

FontXOffset

Default: 0

The additional horizontal offset to the position of the font that respects the top left corner of the bounding box.

FontYOffset

Default: -30

The additional vertical offset to the position of the font that respects the top left corner of the bounding box.

Request Example:

```
{
"B64Image": "Qk0aUAIAAAAAADYAAAAoAAAAEwEA..."
}
```

Response Example:

```
{
"b64_image": "Qk0aUAIAAAAAADYAAAAoAAAAEwEA..."
"prediction": [
      {
         "bboxes_data": [
            {
               "box": [
                  17,
                  96,
                  44,
                  126
               ],
               "score": 0.6461962461471558
            }
         ],
         "classified_result": [
            {
               "difficulty_confidence": {
                  "expert": 0.0,
                  "intermediate": 0.76,
                  "novice": 0.24
               },
               "predict_class": "I"
            }
         ],
         "side": "right"
      },
      {
         "bboxes_data": [
            {
               "box": [
                  370,
                  111,
                  401,
                  141
               ],
                    "score": 0.7243423461914062
                }
            ],
            "classified_result": [
                {
                    "difficulty_confidence": {
                        "expert": 0.0,
                        "intermediate": 1.0,
                        "novice": 0.0
                    },
                    "predict_class": "I"
                }
            ],
            "side": "left"
        }
    ]
}
```

/ml/predict/resnet

<all users>

Header:

Authorization: <jwt_token>
Content-Type: application/json

POST

Fields:

B64Image (required)

Single string of Base 64 image.

Request Example:

```
{
"B64Image": "Qk0aUAIAAAAAADYAAAAoAAAAEwEA..."
}
```

Response Example:

```
{
    “prediction”: [ 1.0, 0.0 ]
}
```

/ml/predict/retinanet

<all users>

Header:
Authorization: <jwt_token>
Content-Type: application/json

POST

Fields:

B64Image (required)
Single string of Base 64 image.

InitialFilter
Default: True
Enable ResNet filter before detecting bbox by RetinaNet.
(If False, disable the filter.)

NoResize
Default: False
Resize image when performing detection task.
(If False, ImageMinSide and ImageMaxSide will be ignored.)

ImageMinSide
Default: 800
In the detection process, resize the minimum side of the image to the 'ImageMinSide' value.

ImageMaxSide
Default: 1333
In the detection process, resize the maximum side of the image to the 'ImageMaxSide' value.

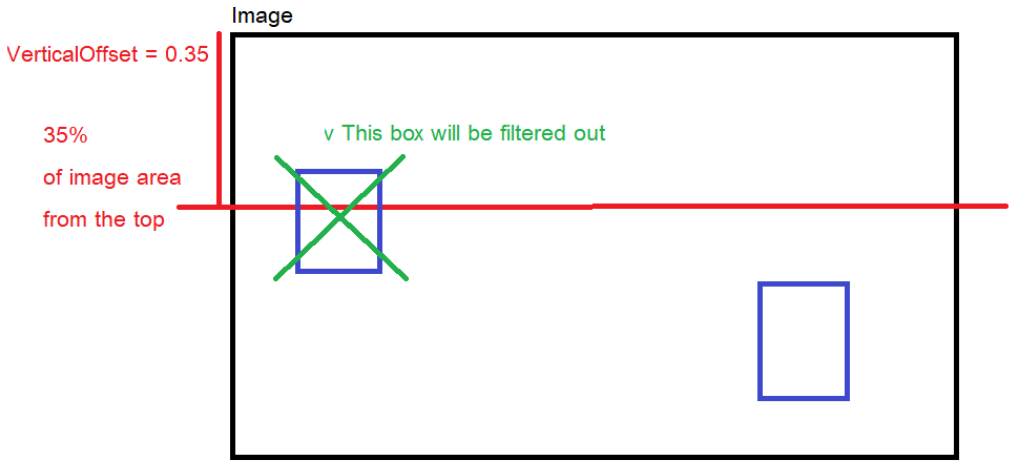
ScoreThreshold
Default: 0.05
Bounding boxes with scores below this value will be filtered out.

MaxDetections
Default: 3
Maximum detection "per side" of the image.
(Each image will be separated into 2 sides. So if MaxDetections = 3, all detections = 6.)

FilterVerticalOutlierBox
Default: False
Filter any bounding boxes that are located within "VerticalOffset".
(If False, VerticalOffset will be ignored.)

VerticalOffset
Default: 0.35
Percentage of the image area from the top image.

Note: FilterVerticalOutlierBox and VerticalOffset are for filtering the bounding boxes that are located too high from the region of the image we want. as shown in the image below



BestOnly ***
Default: True

Select only the bounding box with highest detection score to classify and return the result. (Highly recommended to keep the default value to reduce workload of the vision transformer model)

If Ture, will return the image with the bounding boxes drawed.

If False, all parameters below will be ignored.

BGRColors
Default: [[255, 0, 0], [0, 0, 255]]

An array contains another two arrays of 3 integers (each integer ranging between 0 and 255) to represent the Blue Green and Red (BGR) color values.

BBoxThickness
Default: 6

Thickness of the bounding boxes

ResnetResult
Default: None

Should be direct result from **/ml/predict/resnet**

If **ResnetResult** is not provided, Retinanet will call Resnet automatically for filter unless **InitialFilter** is set to False, Resnet will be ignored.

Request Example:

```
{
"B64Image": "Qk0aUAIAAAAAADYAAAAoAAAAEwEA..."
“ResnetResult”: <resnet response>
}
```

Response Example:

```
{
"b64_image": "Qk0aUAIAAAAAADYAAAAoAAAAEwEA..."
"prediction": [
    {
      "bboxes_data": [
        {
          "box": [
            17,
            96,
            44,
            126
          ],
          "score": 0.6461962461471558
        }
      ],
      "classified_result": null,
      "side": "right"
    },
    {
      "bboxes_data": [
        {
          "box": [
            370,
            111,
            401,
            141
          ],
          "score": 0.7243423461914062
        }
      ],
      "classified_result": null,
      "side": "left"
    }
  ]
}
```

/ml/predict/vit

<all users>

Header:
Authorization: <jwt_token>
Content-Type: application/json

POST

Fields:

B64Image (required)
Single string of Base 64 image.

RetinanetResult (required)
Default: None
Should be direct result from **/ml/predict/retinanet**
Tips: “b64_image” in “retinanet result” can be removed, so it reduces the size of the request payload.

BestOnly ***
Default: True
Select only the bounding box with highest detection score to classify and return the result. (Highly recommended to keep the default value to reduce workload of the vision transformer model)
If Ture, will return the image with the bounding boxes drawed.
If False, all parameters below will be ignored.

BGRColors
Default: [[255, 0, 0], [0, 0, 255]]
An array contains another two arrays of 3 integers (each integer ranging between 0 and 255) to represent the Blue Green and Red (BGR) color values.

BBoxThickness
Default: 6
Thickness of the bounding boxes

DrawClass
Default: True
If True, Draw the label on the bounding boxes.
If False, all parameters below will be ignored.

FontThickness
Default: 4
Thickness of the font.

FontScale
Default: 1.5
Scale of the font

FontXOffset
Default: 0
The additional horizontal offset to the position of the font that respects the top left corner of the bounding box.

FontYOffset
Default: -30
The additional vertical offset to the position of the font that respects the top left corner of the bounding box.

Request Example:

```
{
"B64Image": "Qk0aUAIAAAAAADYAAAAoAAAAEwEA..."
“RetinanetResult”: <retinanet response>
}
```

Response Example:

```
{
"b64_image": "Qk0aUAIAAAAAADYAAAAoAAAAEwEA..."
"prediction": [
    {
      "bboxes_data": [
        {
          "box": [
            17,
            96,
            44,
            126
          ],
          "score": 0.6461962461471558
        }
      ],
      "classified_result": [
        {
          "difficulty_confidence": {
            "expert": 0.0,
            "intermediate": 0.76,
            "novice": 0.24
          },
          "predict_class": "I"
        }
      ],
      "side": "right"
    },
    {
      "bboxes_data": [
        {
```

```
                    "box": [
                        370,
                        111,
                        401,
                        141
                    ],
                    "score": 0.7243423461914062
                }
            ],
            "classified_result": [
                {
                    "difficulty_confidence": {
                        "expert": 0.0,
                        "intermediate": 1.0,
                        "novice": 0.0
                    },
                    "predict_class": "I"
                }
            ],
            "side": "left"
        }
    ]
}
```

/ml/drawBboxes

<all users>

Header:
Authorization: <jwt_token>
Content-Type: application/json

POST

Fields:

B64Image (required)
Single string of Base 64 image.

[(required) either one of **RetinanetResult** or **VitResult**]

RetinanetResult
Default: None
Should be direct result from **/ml/predict/retinanet**
This will ignore **DrawClass** automatically (because Retinanet result do not have classes)
Tips: "b64_image" in "retinanet result" can be removed, so it reduces the size of the request payload.

VitResult
Default: None
Should be direct result from **/ml/predict/vit**
Tips: "b64_image" in "vit result" can be removed, so it reduces the size of the request payload.

NOTE: If both Vit and Retinanet results are provided, Vit results will be prioritized.

BGRColors
Default: [[255, 0, 0], [0, 0, 255]]
An array contains another two arrays of 3 integers (each integer ranging between 0 and 255) to represent the Blue Green and Red (BGR) color values.

BBoxThickness
Default: 6
Thickness of the bounding boxes

DrawClass
Default: True
If True, Draw the label on the bounding boxes.
If False, all parameters below will be ignored.

FontThickness
Default: 4

Thickness of the font.

FontScale
Default: 1.5

Scale of the font

FontXOffset
Default: 0

The additional horizontal offset to the position of the font that respects the top left corner of the bounding box.

FontYOffset
Default: -30

The additional vertical offset to the position of the font that respects the top left corner of the bounding box.

Request Example:

```
{
"B64Image": "Qk0aUAIAAAAAADYAAAAoAAAAEwEA..."
“RetinanetResult”: <retinanet response>
            OR
“VitResult”: <vit response>
}
```

Response Example:

```
{
"b64_image": "Qk0aUAIAAAAAADYAAAAoAAAAEwEA..."
"prediction": [
    {
      "bboxes_data": [
        {
          "box": [
            17,
            96,
            44,
            126
          ],
          "score": 0.6461962461471558
        }
      ],
      "classified_result": null OR [
        {
          "difficulty_confidence": {
            "expert": 0.0,
            "intermediate": 0.76,
            "novice": 0.24
          },
          "predict_class": "I"
```

```
                }
            ],
            "side": "right"
        },
        {
            "bboxes_data": [
                {
                    "box": [
                        370,
                        111,
                        401,
                        141
                    ],
                    "score": 0.7243423461914062
                }
            ],
            "classified_result": null OR [
                {
                    "difficulty_confidence": {
                        "expert": 0.0,
                        "intermediate": 1.0,
                        "novice": 0.0
                    },
                    "predict_class": "I"
                }
            ],
            "side": "left"
        }
    ]
}
```