

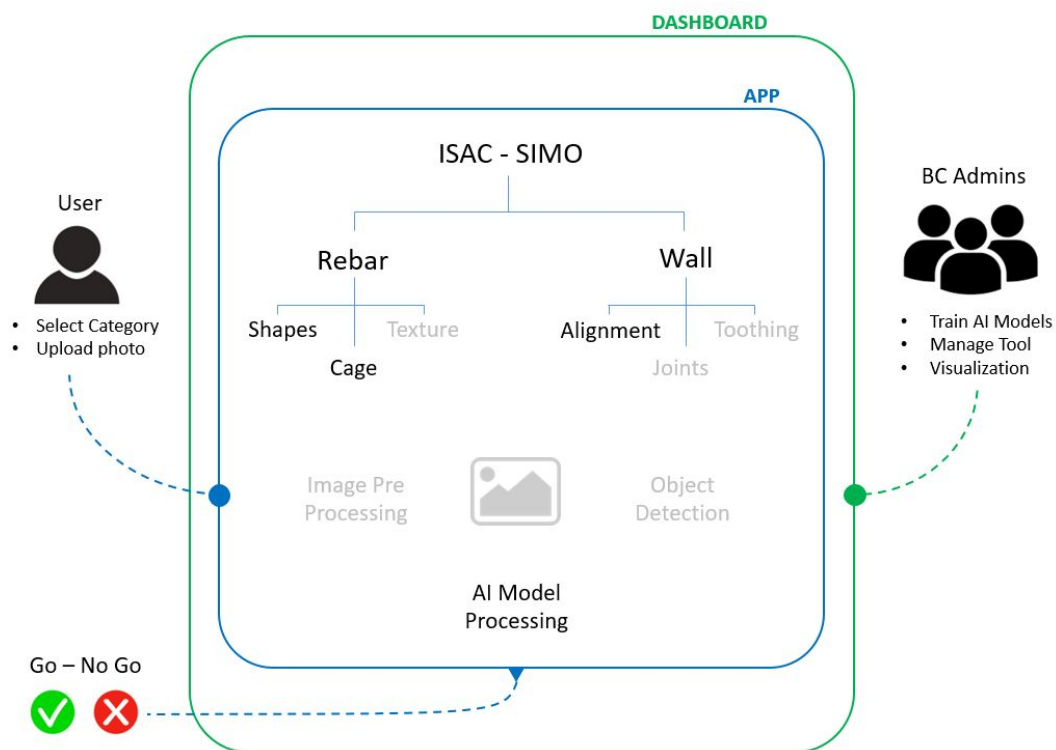
INTRODUCTION

Intelligent Supervision Assistant for Construction - Sistema Inteligente de Monitoreo de Obra

ISAC-SIMO is a system to validate that the intervention work done for homeowners has been done correctly and safely. It is a Build Change project supported by a grant from IBM.

Project detail

The technology consists of a mobile application in order to track the progression of an intervention on a home throughout the process to complete work. The application can validate and analyze the quality of building elements, rebar, walls etc. by guiding the users through a series of checks. In addition to the mobile application, the tool also consists of a web interface that facilitates the management of checks and image processing pipelines implemented.



Overview of the ISAC-SIMO tool

Web Application

This section provides a brief Guide on using the ISAC-SIMO Web Application. It guides you through user registration, project management, classifier/model creation, object types and more.

LOGIN & REGISTER

ISAC-SIMO

Sign In

Email*

user@example.com

Password*

☒ Remember Me

Login

[Register New Account ?](#)

ISAC-SIMO

Register New Account

Email*

Full Name*

Profile Picture

Choose File

No file chosen

Password*

Use strong password with at least 8 characters.

Password confirmation*

Enter the same password.

Type*

☒ User

☐ Project Admin

Register

[Already a User ? Login Here](#)

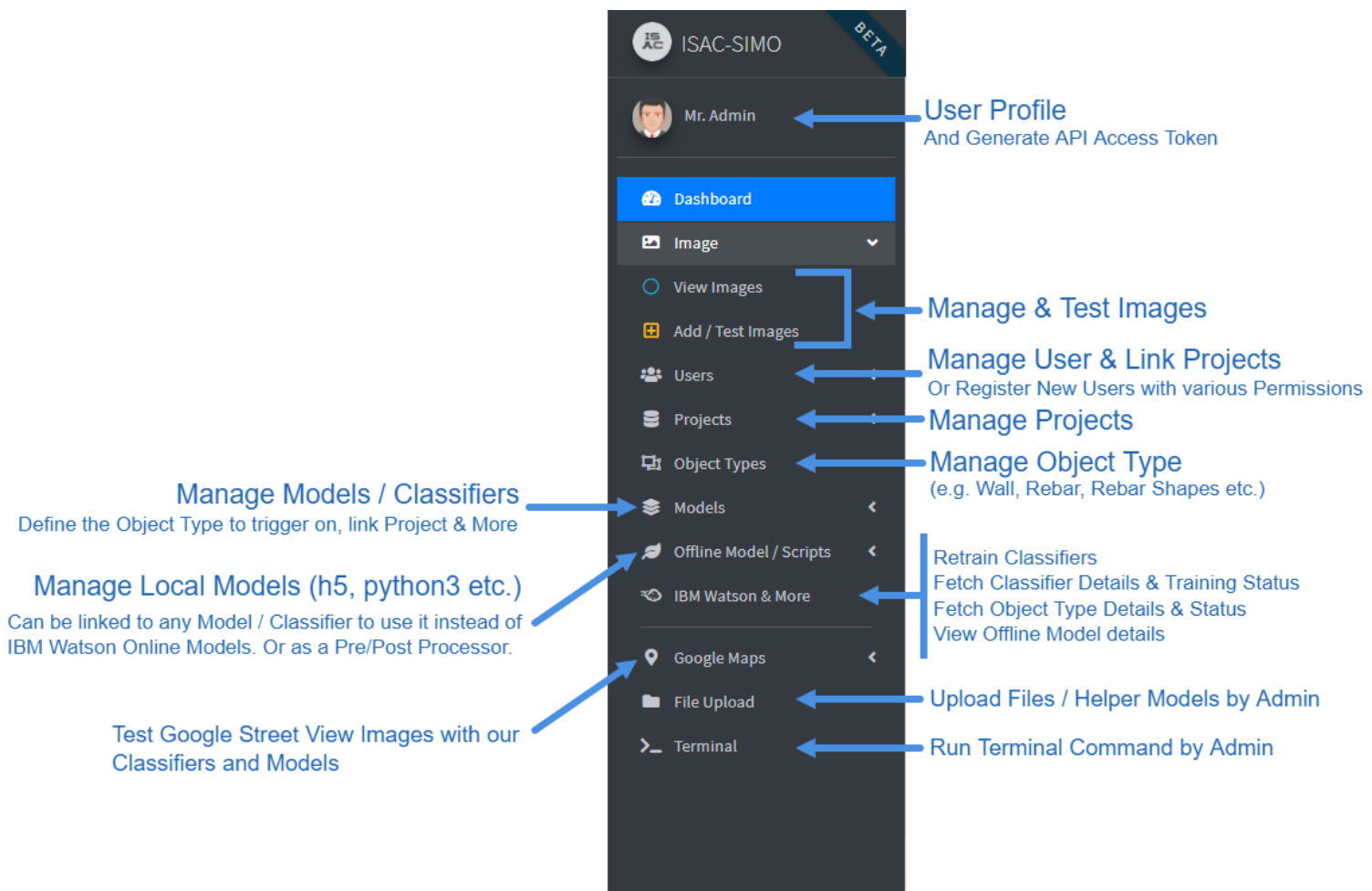
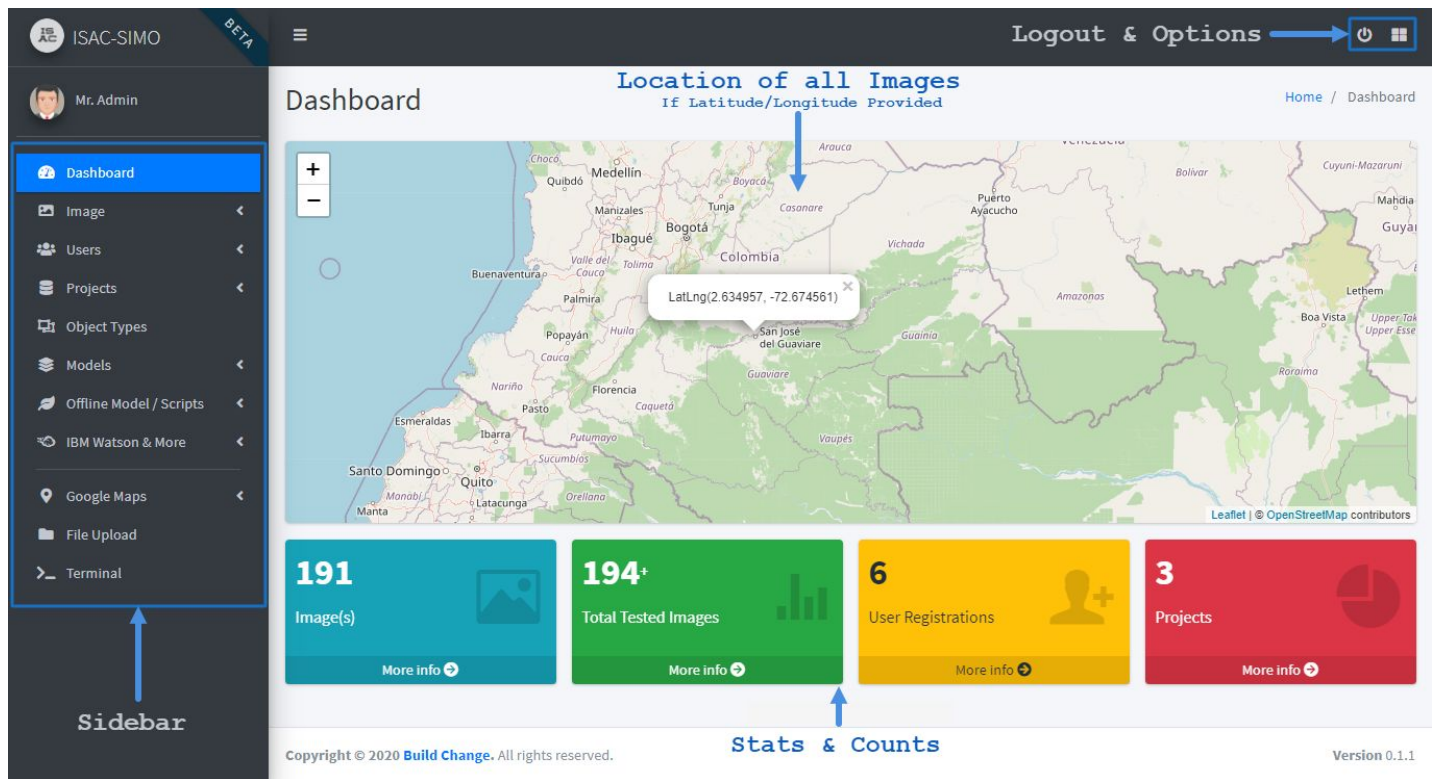
Users can easily register themselves, and choose to be either a normal **User** or a **Project Admin**. As the name suggests, Project Admin can create or moderate Projects, Users, Models and Pipelines. While, normal users can test images and manage their own tested images.

After logging into the web application, the user is presented with a dashboard. Users can click on their name in the sidebar and open the profile page, where they can update profile information and generate API Access Tokens.

Want to Generate Access Token to use with APIs?

Generate Token

DASHBOARD



PROJECTS

Permissions: Admin (All), Project Admin (Own)

Example: Colombia Project, Bisaya Region Rebar Quality Verify Project etc.

Create Project

Create Project
[Home](#) / [Add Project](#)

Project Name*
Name of the Project | Required

Description*
Brief Description | Required

Online Object Detect Model
Default Watson Object Detect Model Name
Make sure the Objects for this model are created [Here](#)
And add required Classifiers for those model [Here](#)

IBM API KEY
Enter your IBM Watson API Key To Use for this Project or other Classifiers
If Provided this Project will be use given Watson Service.

Offline Object Detect Model
Select Offline Detect Model If you prefer Local Offline Detect Model Instead
If Offline Object-Detect Model is provided it is given 1st priority over online model.
Add Offline Model [Here](#)

Project Image*
Choose File No file chosen Image e.g. Logo | Required

☐ **Mark as GLOBAL Project**
Will be used for Guest/Offline Users in Mobile App. Logged in user will be shown via linked projects.
Note: Only One Project should be marked as Global (Best Practice).

Add Project

Users can choose to add Watson Object Detect Models Name and the IBM Watson API Key while creating the Project. Or, they can also link a Local/Offline Detect Model. Then, while testing images, users can choose the Project to test on. First the Image will be passed via provided Object Detect Model to find out the possible object in the Image (instead of manually defining the Object Type while testing).

If Marked as “**Global**” it will be shown to Guest/Offline Users in Mobile App. Logged in users will be shown via linked projects.

View Projects

Projects

Home / Projects

+ Add New Project

Search:

Show

10

 entries

Id	Name	Description	Image	Actions
#3	Earthquake Damage Check	Verify level of severity of earthquake damages. Online Detect Model: 15b7b8e4-05c9-4eb1-bac4-11cfe884c7f3 (Default)	View	Edit Delete Download Refresh
#1	Global Guest Project	Project for Global/Guest Users Online Detect Model: 15b7b8e4-05c9-4eb1-bac4-11cfe884c7f3 (Default)	View	Edit Delete Download Refresh

Showing 1 to 3 of 3 entries

Quick Test Object Detection Model

View Linked Object Types

Test Projects, Object Detection Model

Test Object Detect Model

Home / Test Object Detect Model

Project Detect Model Test Success.

Score: 0.9791245 | Class: wall

```
[
  {
    "object_type": "wall",
    "temp_image": "Image File",
    "pipeline": {
      "score": 0.9791245,
      "result": "wall",
      "location": {
        "left": 118,
        "top": 714,
        "width": 1320,
        "height": 941
      }
    }
  },
  {
    "object_type": "rebar",
    "temp_image": "Image File",
    "pipeline": {
      "score": 0.93320346,
      "result": "rebar",
      "location": {
        "left": 35,
        "top": 0,
        "width": 1750,
        "height": 730
      }
    }
  }
]
```

Clean Temporary Images

Project: Earthquake Damage Check
Online Model: Default Detection
Image*

Choose File

 wall-rebar-together.jpg
Make sure the Status for this classifier is "ready" in [here](#).

Test Detect Model

Sample Test Response Page

OBJECT TYPES

Permissions: Admin (All), Project Admin (Own & Linked)

Example: wall, rebar, rebar shapes etc.

Create/Add Object Types

The Name of Object Type must be unique for that specific Project. ⚠ **If an Object Type is linked to a Project (by Admin), then the Project Admin will have full Access to it.**

View Object Types

Admin and Project Admin can manage Object Types, Change Order of Classifier Pipelines, Test Images against this Object Type and more.

Change the Order of Classifier Pipeline

Mark Verified or Un-Verified
Will revert to Un-Verified if inner classifier is edited.











































Home / View & Create Object Type

Object Type

→ Fetch Object Type Details from IBM Watson

Show 10 entries

Search

Name	Project	Added By	Actions
Rebar Texture	Global Guest Project	Mr. Admin	     
Rebar Rust Detection	Global Guest Project	Mr. Admin	     
Wall Bond Pattern	Global Guest Project	Mr. Admin	     
Rebar Shape	Global Guest Project	Mr. Admin	     
Facade Wall	Global Guest Project	Mr. Admin	     
Rebar Hooks Detection	Object Detection Models	Mr. Admin	     
Rebar Texture	Object Detection Models	Mr. Admin	     

Showing 1 to 7 of 7 entries

Previous 1 Next

Create Object Type

Object Type*

Object Type (e.g. wall, rebar)

Must be unique and lowercase for each project

Project*

Earthquake Damage Check

Instruction

Instruction for Mobile User.
How to take Picture/Video

Instruction Image

Choose File No file chosen

Add Clear

Form to add Object Types

Test an Image passing through all Classifier/Model linked to this Object Type

Delete Edit

















View all Classifiers/Models of this Object Type

Ordering Classifiers for Rebar Shape

Home / Order Classifiers (Rebar Shape)

+ Create New Classifier

Project: Global Guest Project
Object Type: Rebar Shape
Verified: No

Order	Name	Added By	Actions
1	Gaussian Blur & Resize (Local: Gaussian Blur & Resize)	Mr. Admin	   
2	rebarshapesclassifier_166863088	Mr. Admin	   
3	908b69dc-4b10-4e8a-be61-2469c99838f2	Mr. Admin	   
4	Rebar-Shapes Post Process (Local: Rebar Shape Post Process)	Mr. Admin	   

Save

MODELS / CLASSIFIER

Permissions: Admin (All), Project Admin (Own & Linked)

Type:

- IBM Watson Train New Model
- IBM Watson add Pre-Trained Model
- Offline Model (Classifier, Pre/Post Processor)

Create Models

Admin or Project Admin can add a new Model. A new model can be trained by uploading zipped images and choosing to process it or not. Users can also add Pre-Trained Model by specifying the Classifier Name and IBM Watson API Key. Also, users can add and link Offline Model / Script that can be used either as a Classifier or Pre/Post Processor.

Create Classifier

Source of the Model*

IBM Watson

Choose the Source of Model. IBM Watson for adding trained/pretrained classifier or object detection. Offline Model to add Offline Model/Pre/Post/Processor.

IBM Watson
OR
Offline Model

Would you like to Train Model or Add Pre-Trained Model?*

Add Pre-Trained Model

Pre-Trained Model
OR
Train New Model

If Source of Model is Offline Model then option to Link Offline Model is shown.

Classifier Name*

The name of the new classifier

Name of Classifier

* This is What is used to Call Watson AI

☐ **Is Object Detection ?**

Check this if you are using IBM Watson Object Detection Model to act as Classifier.

Check this if you are using
IBM Watson Object Detection
Model to act as Classifier.

IBM API KEY

Enter your IBM Watson API KEY

If Provided the Classifier/Model will be linked or created in given Watson Service.

Provide the IBM API Access Key of this
Watson Model
Else Defaults to the linked Projects Watson API KEY

Project*

Select a Project

Links Classifiers to specific Project

Link a Project

Object Type*

Select a Object Type

Select the Object Type for which to create this classifier.
To Create new Object Type [Go Here](#)

Link a Object Type (And add to the Pipeline)

Order*

1

Order to Run in the Pipeline

Create Classifier

View Models

+ Create New Classifier

















+ Fetch Classifier Details

+ Re-Train Classifiers

Show entries

Show if it is a Pre/Post Processor

Search:

Name	Project	Object Type	Order	Actions
Gaussian Blur & Resize (Local: Gaussian Blur & Resize) Pre-Process	Global Guest Project	Rebar Shape	1	   
rebarshapesclassifier_166863088	Global Guest Project	Rebar Shape	2	   
908b69dc-4b10-4e8a-be61-2469c99838f2	Global Guest Project	Rebar Shape	3	   
Rebar-Shapes Post Process (Local: Rebar Shape Post Process)	Global Guest Project	Rebar Shape	4	   

Showing 1 to 4 of 4 entries (filtered from 13 total entries)

Name

- Filter By Project

Rebar Shape

Order

Actions

Previous **1** Next

Shows if it is an Offline Model

Delete

Edit

Test this Classifier with an Image
Works for Watson Classifier, Watson Detect Model, Offline Classifier and Offline Pre/Post Processor

View Info and Labels/Classes (e.g. go,nogo)

Users can easily view all the Models/Classifiers for each Project and Object Types. The Offline Model, Labels, Pre/Post Processor Status is easily viewable. Users can also test this Specific Model for debug purposes. As shown above in the Object Types section, Users can also easily change the Order of Classifier in the pipeline by simple drag and drop.

Test Model

```
{
  "score": 1,
  "result": "go",
  "break": false
}
```

Result & Score returned by the Classifier

Pre-Processor will return an Image.
Watson will return with its default format.

Classifier Name:
Rebar Texture Ribs Check

Offline Model: Rebar Texture Ribs Check

Model Format: py

Object Type: Rebar Texture

Image*
 No file chosen

Classifier / Model Details

Image File to Test

For Post-Process:
Fake Score*

Fake Result*

In Case of Post-Processor, as it receives score and result parameter in run() function, this given values will be passed while testing it.

OFFLINE MODELS

Permissions: Admin (All), Project Admin (Only Own)

Type:

- **Pre-Processor** (Python 3 Format, Useful to Process Image e.g. Gaussian Blur/Resize image etc.)
- **Post-Processor** (Python 3 Format, Alter/Calculate: Result & Score or do custom classification)
- **Classifier** (h5, keras, py format which should classify an image and return scores appropriately)
- **Object Detect** (h5, keras, py format which should return detected objects score and bound area)

As we saw in the Models/Classifiers section above, Users can link custom Offline Models to any Classifier. The Offline Model can be of type Processor (Pre/Post), Classifier and Object Detect. A Classifier can only link Processor or Classifier, while Object Detect can be linked to a Project.

The Response and data receivable by Offline Model is predefined and should follow strict guidelines.

Technical Details on creating Offline Model can be found here:

https://www.isac-simo.net/app/offline_model/readme.md

Add Offline Model

The screenshot shows the 'Add Offline Model' form with the following fields and annotations:

- Name***: A text input field containing 'Gaussian Blur'. An annotation points to it: 'Name of this Offline Model' and 'This is shown in the Pipeline'.
- Model type***: A dropdown menu showing 'Processor'. An annotation points to it: 'Processor / Object Detect / Classifier'.
- Model format***: A dropdown menu showing '.py (python3)'. An annotation points to it: '.h5 / .keras / .py' and '(Processor will only accept .py format)'.
- Preprocess**: A checked checkbox. An annotation points to it: 'Preprocessor / Post Processor' and '(If the Model Type is Processor)'.
- Postprocess**: An unchecked checkbox.
- File***: A file upload button labeled 'Choose File' and 'No file chosen'. An annotation points to it: 'Offline Model File itself.' and '(Remove all unnecessary codes and follow guidelines)'.

At the bottom of the form is a green 'Add Model' button.

View Offline Models

Users can manage Offline Models and update the model file. If the offline model is python 3 format, users can also check the dependencies used by it. Admin can if required install these dependencies via terminal. And, just like Model and Offline Model can also be tested.

Check all Dependencies used by Python 3 Model

Quick Test

Show 10 entries

Search rebar texture

Name	Type	Format	Added By	Actions
Rebar Texture Ribs Check	Post-Process	py	Mr. Admin	
Rebar Texture Rust Check	Post-Process	py	Mr. Admin	
Rebar Texture Rust Detection	Post-Process	py	Mr. Admin	

Showing 1 to 3 of 3 entries (filtered from 8 total entries)

Previous 1 Next

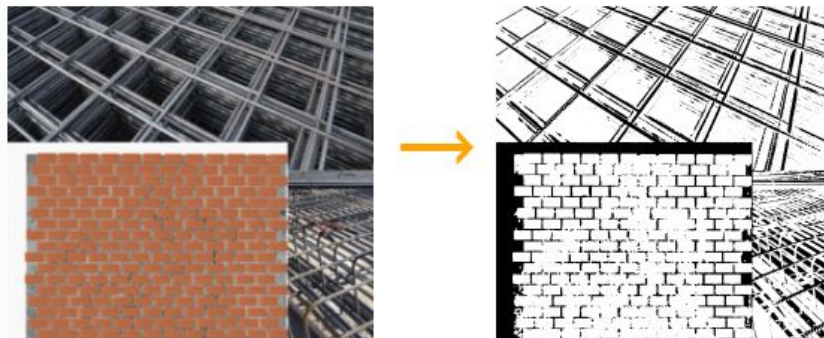
Post-Process / Pre-Process / Classifier / Object Detect

Delete Edit Download File

Test Offline Model

This example shows a quick test of a Preprocessor Offline Model. The Preprocessor returns a processed image. Similarly, Postprocessor, Classifier and Object Detection will return certain JSON responses.

Pre-Processed Image:



Offline Model:

Gaussian Blur & Resize

Labels: []

Model Format: py

Image*

Choose File No file chosen

Test Offline Model

FILE UPLOAD

Permissions: Admin (All)

Admin Users can Upload other types of Files, Images, Helper Models etc using this file upload feature. After uploading the file, the user can copy the **root path** to that file, which can be used inside of the pre/post processor, classifiers etc. Also, users can share the file as normal web url.

⚠ Other users can use the root path inside offline models, but will not have file upload access.

Upload File

Name*

→ Name of File

File*

Choose File No file chosen

→ File to Upload (100 MB Limit)

Upload Files like Unet Models etc. here & use this path in pre-processor or post-processor

Upload Files like Unet Models etc. here.
Then path can be used in pre-processor or post-processor.





Upload

Clear 

View Files

Show entries

Search:

Name	Added By	Actions
Unet Brick Segmentation	Mr. Admin	   

Showing 1 to 1 of 1 entries

Previous **1** Next

Download File

Copy Root Path

i.e. the path to use inside classifiers,
pre/post processor etc.

USERS

Permissions: Admin (All), Project Admin (View/Edit Lower Level User Only)

Add User

Admin or Project Admin can create/edit or register users themselves. Admin can assign the user to any Project, while Project Admin can assign users to their own Projects only. Project Admin will only have view and edit access to the users (But not Admin Users).

⚠ Note that Newly registered Project Admin must be Verified by Admin before they login.

- **User** (Own Image Access)
- **Engineer** (Full Image Access)
- **Government** (Full Image Access)
- **Project Admin** (Project Level Access)
- **Admin** (Full Access)

Link User to Multiple Projects

Email*

Full Name

Profile Picture

Choose File No file chosen

Password*

- Your password can't be too similar to your other personal information.
- Your password must contain at least 8 characters.
- Your password can't be a commonly used password.
- Your password can't be entirely numeric.

Password confirmation*

Enter the same password as before, for verification.

User type*

User ▼

Choose User Type Wisely

Projects

☐ Global Guest Project

☐ Object Detection Models

☐ Earthquake Damage Check

Register User

View Users

Here, Admin will have full control over all users. But, Project Admin can edit and assign users (Non admin) to their projects; but cannot delete the users.

+ Add New User

Search:

Show 10 entries

#	Name	Email	Type	Projects	Image	Actions
1	John Doe	john.doe@example.com	Project Admin	<div>Colombia Project</div> <div>Earthquake Damage Check</div>	View	<div><div></div><div></div></div>
2	Foo Bar	foobar@example.net	User	-	View	<div><div></div><div></div></div>
3	Tom	tom@email.co.uk	Project Admin	<div>Colombia Project</div>	View	<div><div></div><div></div></div>
4	Mr. Admin (You)	admin@example.com	Admin	*	View	<div><div></div><div></div></div>

Showing 1 to 6 of 6 entries

Previous

1

Next

Edit User & Link Projects

Delete User

All Linked Projects

If No Projects Linked then Global Guest Project can be used if it exists.



IMAGES

Add Images

Images can be tested with Mobile Applications or APIs. But, Admin also has Dashboard access to Add and Test Images. Any Image can be tested by choosing a **Project** or an **Object Type**. If the Project is chosen then the Object Detection Model linked in the Project will be used to detect the Object Type and is passed through the Classifier Pipeline. Similarly, if Object Type is chosen then this is passed through the Classifiers in this object type (without caring about the project).

Title

Title for these Images | Not Required

Description

Descriptions | Not Required

Latitude

GPS Latitude | Not Required

Longitude

GPS Longitude | Not Required

Multiple Images

Choose Files

No file chosen

Multiple Images to Test

Project

Select a Project

Link this test to a Project | Not Required

Object Type

Select to force an Object Type

Force to use certain Object Type | Not Required

You Can Choose an Object Type to Force and use that type (Or Else object detect model is used to detect automatically)

If Object Type is Selected, it is given higher priority then selected Project.

Adding As: Mr. Admin

Add Image

Either Project or Object Type is Required

⚠ You Can Choose an Object Type to Force and use that type (Or Else object detect model from chosen Project is used to detect the object in the given image)

View Images

Admin can View and Manage all Images. Project Admin can manage images linked to their Projects only. Government & Engineer can view linked Project Images. Normal Users can only Manage their own Images. **Here, in the Image View page a quick preview of Image, and its result and score can be viewed by clicking over the number list.**

The Border of Number list suggests; Green is **Go**, Red is **No Go** and Orange is **No Result**.

Edit / View Test Result and Details

Delete Test and all its Images

Show 10 entries

Id	Title	Description	User	Project	Image	Actions
I-151	-	-	Anonymous	Retrofit Assistant	1	
I-149	-	-	Anonymous	Retrofit Assistant	1	
I-146	-	-	Anonymous	Retrofit Assistant	1	
I-145	-	-	Anonymous	Retrofit Assistant	1	
I-144	Wall Check	Testing Wall Facade	Mr. Admin	Global Guest Project	1 2 3 4	
I-143	-	-	Anonymous	Retrofit Assistant	1	

Showing 51 to 60 of 191 entries

Previous 1 ... 5 6 7 ... 20 Next

Added By
(Can be Anonymous User via Mobile Applications)

Images with Result & Score

View Image Test Result

Inside the Update Image page, you can see Test Results at the bottom. Clicking on Images will Popup the Image and show brief Result, Score and Object Detected. By clicking the Info/Review icon, we can see detailed score and result for each Pipeline along with the ability to verify the result.



Title/Class: Go
Score: 1.0
Object: Wall Bond Pattern



Verify Test Results - 159

Result:

Go

Score:

1.0

Object Type:

wall bond pattern

Verified: ☐

Retrained: No

Pipeline Status:

Model: Force Object Type, Result: wall bond pattern, Score: 1

Model: UNET Brick Pre-Processor, Result: Pre-Processed Success, Score: 1

Model: UNET Wall Post-Processor, Result: Go, Score: 1

Update

Close

TERMINAL

Permissions: Admin (All)

Admin has the ability to run some commands like; install python packages, list packages installed etc. If an offline classifier or processor needs a specific package or library, then Admin can install it here. The Terminal Output is visible and all commands are sanitized properly.

Terminal Output



11/3/2020, 1:23:58 PM - Terminal Output
Python 3.6.8

Command

Run ↵

All Commands will run inside the project's environment. Know what you are doing.

Allowed Commands:

- pip install
- pip --version
- python --version
- pip list
- ls



Allowed Commands

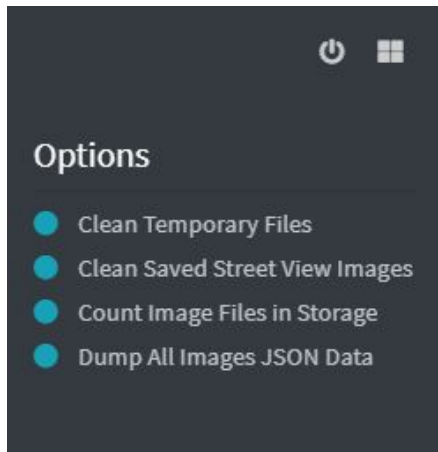


Enter Command to Run

MISCELLANEOUS

Right Sidebar

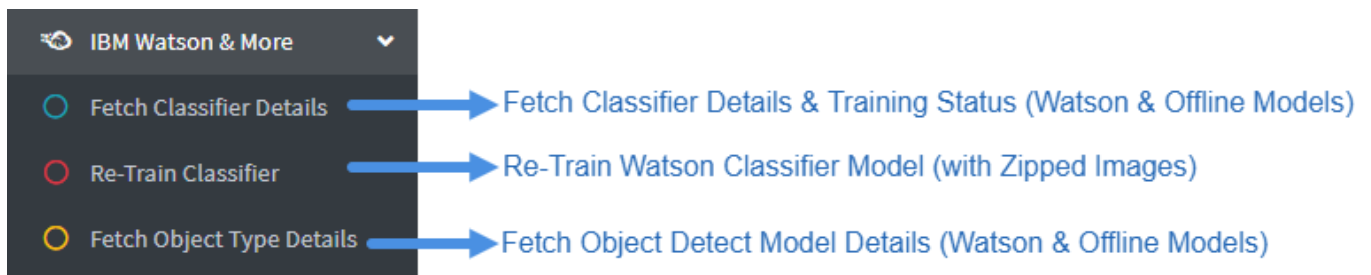
Permissions: Admin (All), Project Admin (Dump JSON Image Data)



IBM Watson & More

Permissions: Admin (All), Project Admin (Linked)

Feature Includes; Retraining Classifiers, Fetch Classifier Details & Training Status, Fetch Object Type Details & Status and View Offline Model Details.



Example Response for Fetch Classifier Details:

Result:

Project: Global Guest Project-1

Object: Rebar Shape

Model: rebarshapesclassifier_166863088

```
{
  "classifier_id": "rebarshapesclassifier_166863088",
  "name": "rebar shapes classifier",
  "status": "ready",
  "owner": "010054b8-b373-4346-9973-19137dbbd6bb",
  "created": "2020-07-09T19:04:06.169Z",
  "updated": "2020-07-14T22:40:28.561Z",
  "classes": [
    {
      "class": "Go"
    },
    {
      "class": "No Go"
    }
  ],
  "retrained": "2020-07-14T22:40:28.561Z",
  "rscnn_enabled": false,
  "core_ml_enabled": true
}
```

Mobile Application

The Mobile application allows users to login, register and take or upload Images of different Objects (Wall, Rebar etc.) to classify it as **GO** or **NOGO**. Guest Users who choose not to login will only have access to Global Guest Project and its Object Types (If they exist). Otherwise, logged in users will only have access to Projects and the Object Types they are linked to.

LOGIN & REGISTER

WELCOME TO ISAC-SIMO

ISAC

Skip Authentication

OR

SIGN IN

Email*

Email

Password*

Password

Login

Don't Have an Account?

Sign up

Continue as Guest User

No Authentication Required

Will only have access to Global Guest Project

Enter Login Credentials

Register as "User"

CREATE ACCOUNT

OR

Skip Authentication

Name*

Full Name

Email*

Email

Password*

Password

Sign Up

Already Have an Account?

Login

Continue as Guest User

No Authentication Required

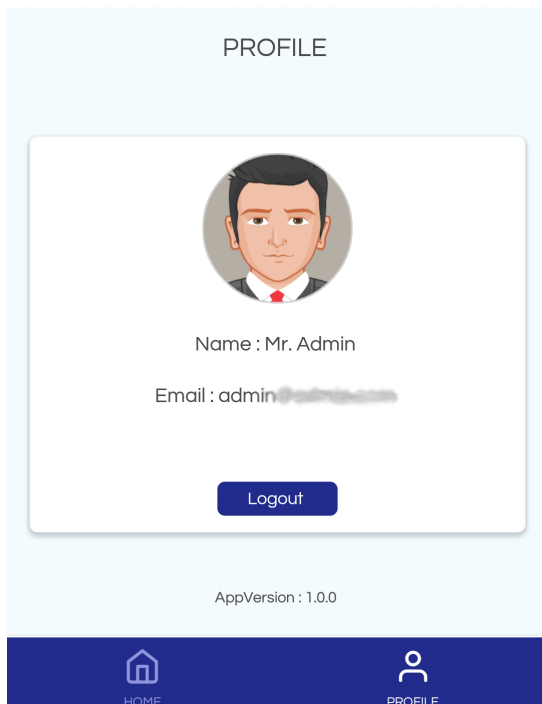
Only Access Global Guest Project

Choose Profile Picture

Enter User Details

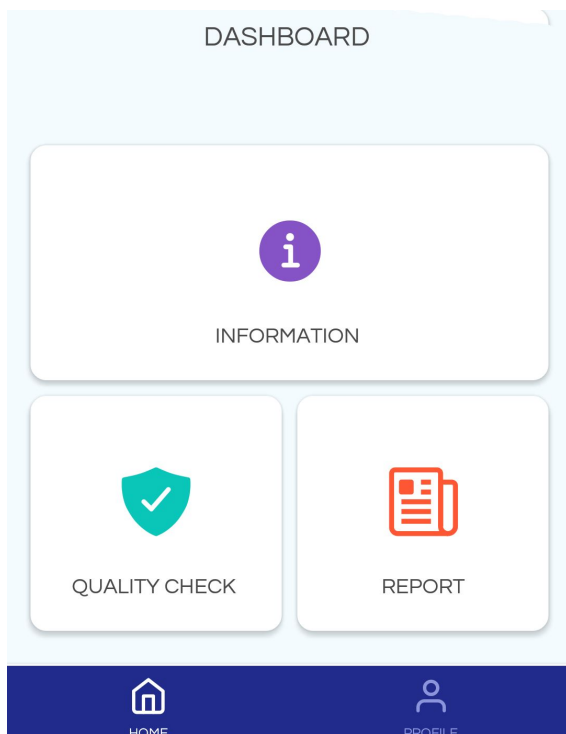
PROFILE

The Profile tab shows the logged in users Name, Email, Profile Image and option to Logout. Guest users will be considered a temporary Anonymous User.



HOME

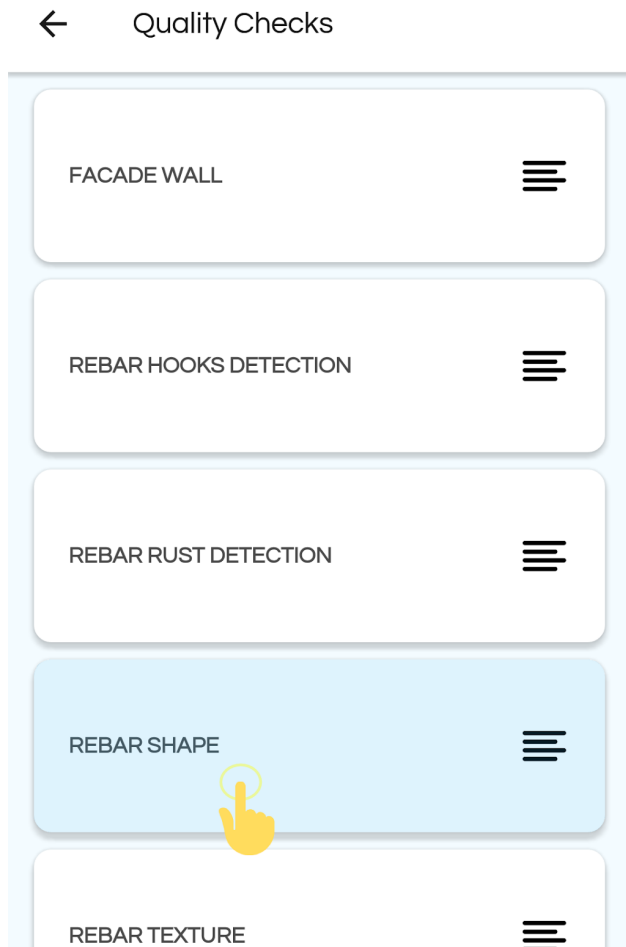
The Home Tab is the Mobile Dashboard. There are Information, Report and Quality Check Options that can be clicked. **Quality Check** is the main option where users can test images of different objects and view the result.



QUALITY CHECK

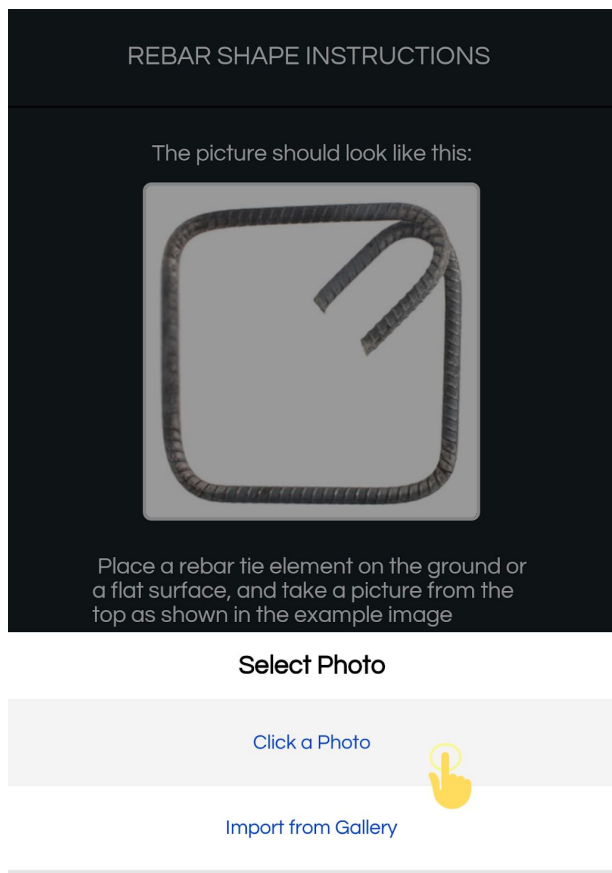
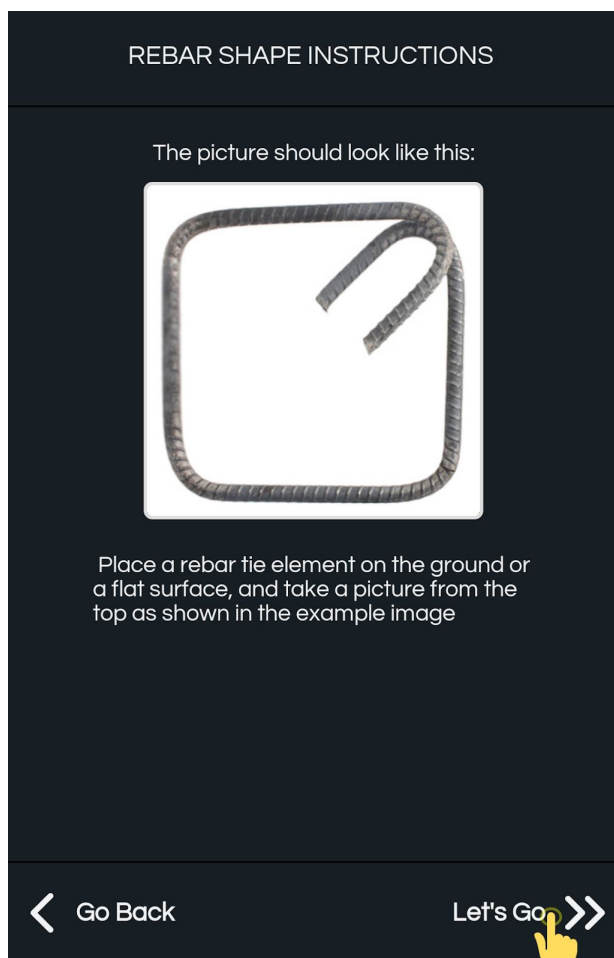
As mentioned multiple times above, Guest Users who choose not to login will only have access to Global Guest Project and its Object Types (If they exist). While, logged in users will only have access to Projects and the Object Types they are linked to. This Quality Checks page lists all the Object Type users can test by taking photographs.

First, Choose the Object Type for which to perform a quality test. In the image below, users may choose Facade Wall, Rebar Shapes etc.

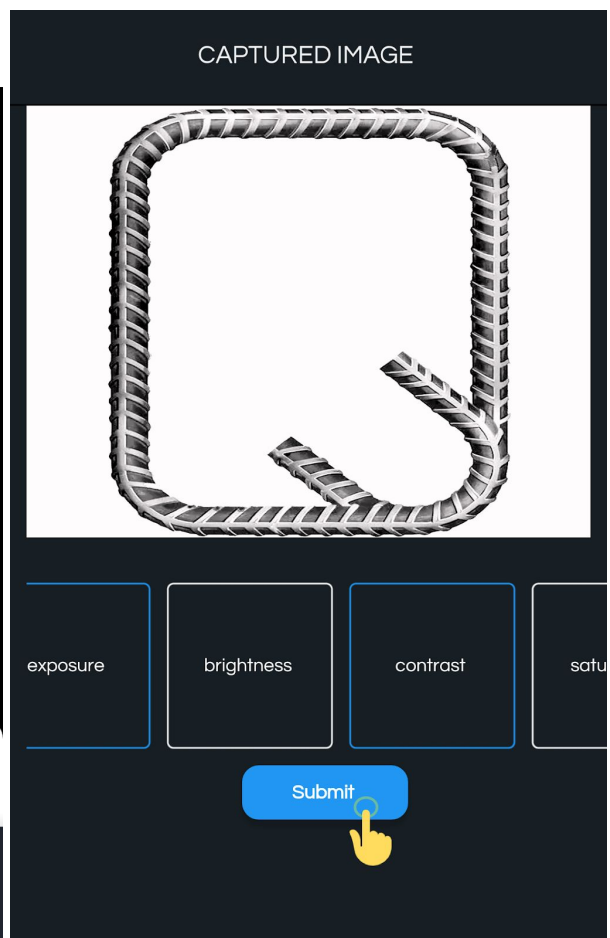
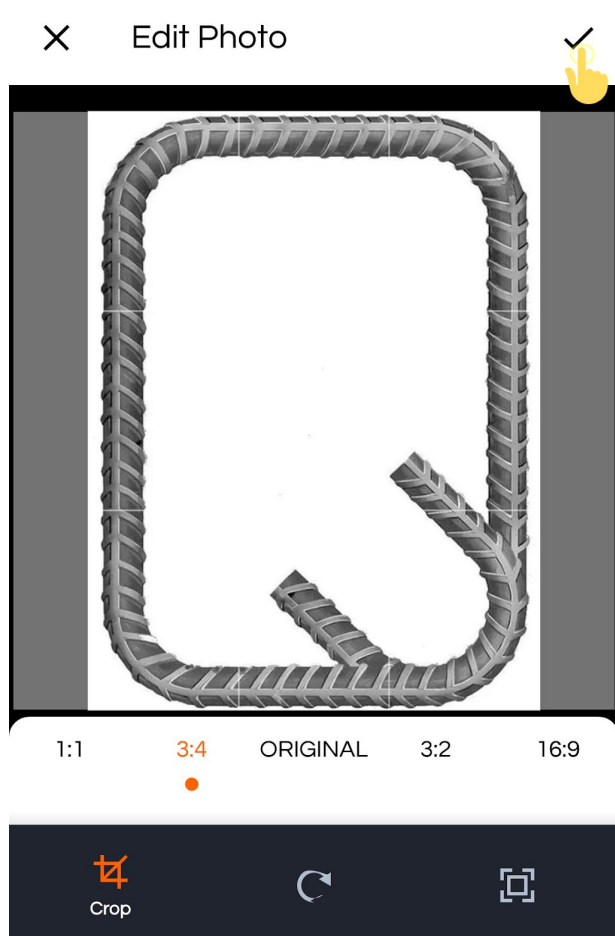


For this guide, let's choose Rebar Shape. Clicking on Rebar Shape in the list will open another page that shows Instruction and a Sample Image on how to properly capture the Image. Following the instruction will make sure that the result will be better and accurate.

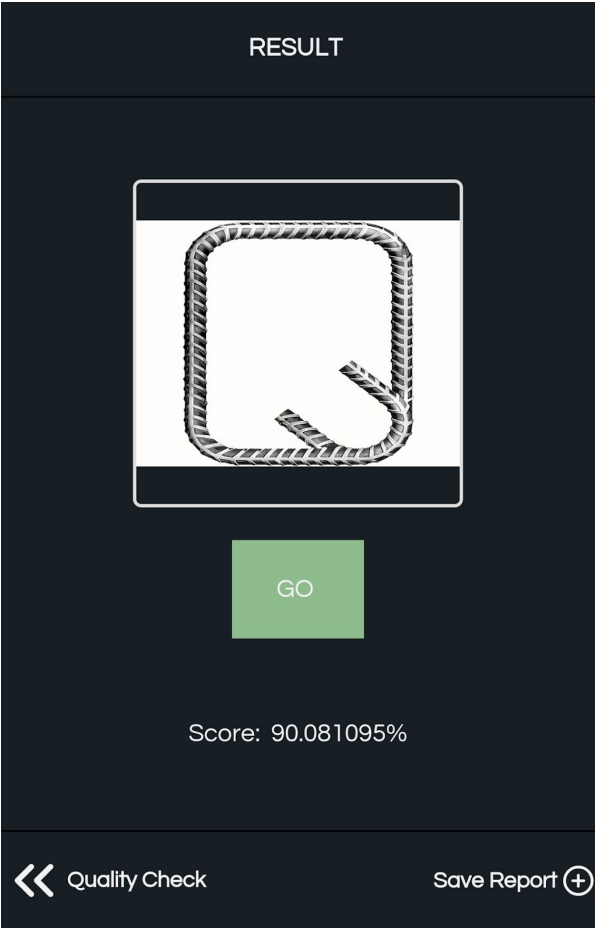
Next, you can click on the **"Let's Go"** button to capture or upload images for testing. The Uploaded image will be passed through all Classifiers/Models Pipeline that is linked to the chosen Object Type. Before uploading users can crop & edit the images.



Make sure to Crop the Image so that the Object is centred and no other obstruction is visible. The image brightness, contrast, hue etc. can be easily adjusted in the next screen.



After clicking the **“Submit”** button the Image is sent and processed by the server. And the result and score is shown. Results can generally be Go, Nogo or No Result and score are generally 0 to 100 percent. Score is the confidence level on the result. For Example, if the result is **“GO”** and the score is 90% like below, then it suggests that the Image passed with 90% confidence. (i.e. the Image is Okay and in this case Rebar Shape is good)



The Score and Result of all Pipeline is accessible in the Web Dashboard. Here, all Pipeline Classifiers and the score they returned are shown.

Result:	
go	
Score:	
0.90081095	
Object Type:	
rebar shape	
Verified: <input type="checkbox"/>	Retrained: No
Pipeline Status:	
Model: Force Object Type, Result: rebar shape, Score: 1	
Model: Gaussian Blur & Resize, Result: Pre-Processed Success, Score: 1	
Model: rebarshapesclassifier_166863088, Result: Go, Score: 0.916	
Model: All Detected, Result: View Copy	
Model: 908b69dc-4b10-4e8a-be61-2469c99838f2, Result: u-hook, Score: 0.8856219	
Model: Rebar Shape Post Process, Result: go, Score: 0.90081095	

Getting Started

This section will guide you through the steps to create a simple Project with Rebar Shape Quality Checker. It will cover creating a project, adding and linking a classifier, adding and linking a offline model, ordering the pipeline and testing an image via mobile application.

STEP 1 - REGISTER AS PROJECT ADMIN

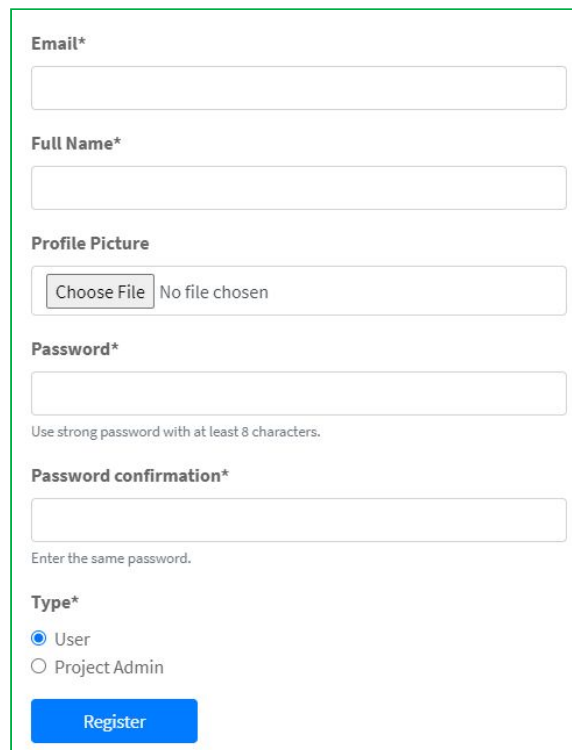
[More info on Login & Register](#)

In the Registration page fill up your Details, Email and Password. Then, choose Type as **“Project Admin”** so that you can create and manage projects and models.

A Project Admin will have access to other user details, so the user must be first verified by an Admin. Wait for Admin to verify your account, so that you can login. After the account is verified you can login and access the Dashboard.

You can also register as Type **“User”** if you want. But, you can only test images after you are linked to a Project by Admin or Project Admin.

Note: Password needs to be strong with Upper Case, Numbers and Special Characters.



The registration form is enclosed in a green border. It contains the following fields and options:

- Email***: A text input field.
- Full Name***: A text input field.
- Profile Picture**: A button labeled "Choose File" and a text "No file chosen".
- Password***: A text input field with a note below it: "Use strong password with at least 8 characters."
- Password confirmation***: A text input field with a note below it: "Enter the same password."
- Type***: Two radio buttons, "User" (selected) and "Project Admin".
- Register**: A blue button at the bottom.

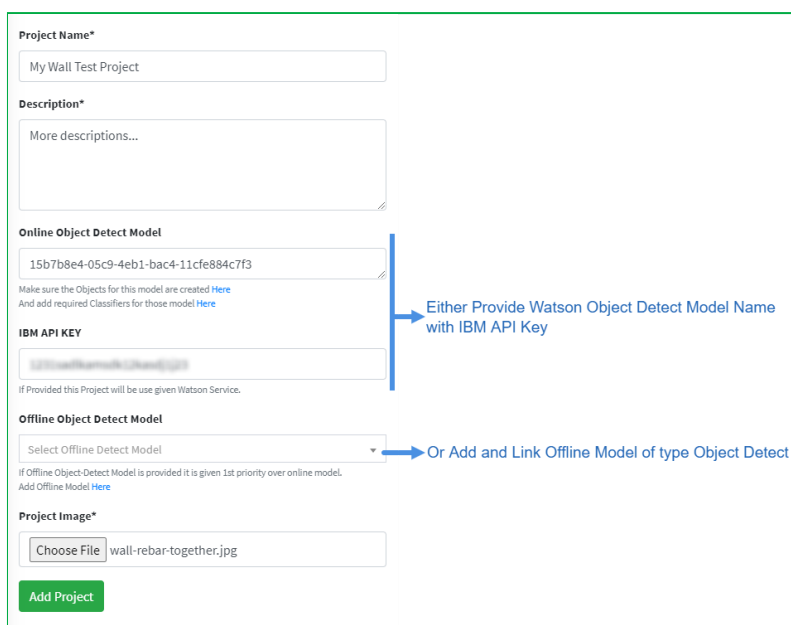
STEP 2 - CREATE A NEW PROJECT

[More info on Projects](#)

As you registered as a Project Admin, you can create and manage multiple projects. From the Sidebar, you can access View Projects and Create Project Page. Lets create a New Project as shown in this Image.

Fill in the Project Name, Description and Image. Now, you can either link a Watson Object Detect Model with IBM API Access Key. Or, add and link Offline Model of type Object Detect.

Then, when testing an image using the API you can choose to force an object type by providing *object_type_id* or choose to use this Project Object Detection Model providing the *project_id*.



The "Create New Project" form is enclosed in a green border. It contains the following fields and options:

- Project Name***: A text input field with the value "My Wall Test Project".
- Description***: A text area with the placeholder "More descriptions...".
- Online Object Detect Model**: A text input field with the value "15b7b8e4-05c9-4eb1-bac4-11cfe884c7f3". Below it, a note says: "Make sure the Objects for this model are created [Here](#) And add required Classifiers for those model [Here](#)".
- IBM API KEY**: A text input field with a blurred value.
- Offline Object Detect Model**: A dropdown menu with the value "Select Offline Detect Model". Below it, a note says: "If Offline Object-Detect Model is provided it is given 1st priority over online model. Add Offline Model [Here](#)".
- Project Image***: A button labeled "Choose File" and a text "wall-rebar-together.jpg".
- Add Project**: A green button at the bottom.

Annotations with blue arrows point to the Online Object Detect Model and Offline Object Detect Model fields, with the text: "Either Provide Watson Object Detect Model Name with IBM API Key" and "Or Add and Link Offline Model of type Object Detect".

Now, if you visit the View Projects page you can see this newly created Project with a hint that you need to add Object Types and Classifiers which we will do next. (You can also test linked Object Detect Model)

STEP 3 - ADD OBJECT TYPE

[More info on Object Types](#)

You have created a Project, but you need to add Object Types that this project will test. For Example, in our “My Wall Test Project”, users will be able to test Wall Facade, Wall Bond Pattern etc. These are the Object Types that can be tested. You can view and manage the Object Types as shown in Image below.

→ Fetch Object Type Details from IBM Watson

Show 10 entries Search:

Name	Project	Added By	Actions
Wall Facade Test	My Wall Test Project	Test User	
Wall Bond Pattern Test	My Wall Test Project	Test User	

Showing 1 to 2 of 2 entries Previous 1 Next

Object Types Linked to our Project

Create/Edit Object Types

Create Object Type

Object Type*

wall bond pattern test

Must be unique and lowercase for each project

Project*

My Wall Test Project

Instruction

Take Image Properly and other instructions....

Instruction Image

Choose File No file chosen

Previous: /media/object_types/d047499ee0ff4d77a13181c1aed271f5.png

Update Clear

Here, we add Object Types, choose the Project and provide suitable Instruction and Image on how to perform the test. Now, the Classifiers/Models Pipeline for these specific Object Types can be added so that users can test.

STEP 4 - ADD CLASSIFIERS & REORDER PIPELINE

[More info on Models / Classifiers](#)

As we have added the Object Types, when we login from the Mobile Application or use API we can see the option to choose these object types for testing images. Currently, no Classifier/Model has been linked to this Object Types pipeline so the tested result will be empty. So for that, let's start adding classifiers/models. We can add multiple models, watson models, offline models, pre/post processors and order the pipeline appropriately.

For this example, we will add models for “Wall Bond Pattern Test”. We have created two python 3 scripts, one to Pre-Process the Image of Brick Wall and the other to Post-Process and Classify the image and return GO/NOGO Result. As these are Offline Model (Not Watson), we first need to add these in Create Offline Model Page.

[More info on Offline Models](#)

After we have added the Pre/Post Processor appropriately we can quickly test an image and view python dependencies. Make sure that when creating Offline Models, study the Readme guide and view examples. Here, we see that we created one Pre-Processor and one Post-Processor.

+ Add Offline Model

[Readme for guide and example](#)

Show 10 entries

Search:

Name	Type	Format	Added By	Actions
UNET Brick Pre-Processor	Pre-Process	py	Test User	<div></div>
UNET Wall Post-Processor	Post-Process	py	Test User	<div></div>

Showing 1 to 2 of 2 entries

Previous

1

Next

Now, finally we can create a Model/Classifier and link these offline models. You could ofcourse use Watson Model or Train yourself with Images. In the create form choose the Source of Model, fill the form as required and set the order in which to run.

Source of the Model*

Offline Model

Offline Model

Unet Brick Pre-Processor - py - (Pre-Process)

If Offline Model is added it is used with 1st priority

Classifier Name*

UNET Brick Pre-Processor

Project*

My Wall Test Project

Links Classifiers to specific Project

Object Type*

Wall Bond Pattern Test

Select the Object Type for which to create this classifier.
To Create new Object Type [Go Here](#)

Order*

1

Create Classifier

Pre-Processor

Source of the Model*

Offline Model

Offline Model

Unet Wall Post-Processor - py - (Post-Process)

If Offline Model is added it is used with 1st priority

Classifier Name*

UNET Wall Post-Processor

Project*

My Wall Test Project

Links Classifiers to specific Project

Object Type*

Wall Bond Pattern Test

Select the Object Type for which to create this classifier.
To Create new Object Type [Go Here](#)















Order*

2

Create Classifier

Post-Processor

If you want to easily change the order of the pipeline (Very useful for multiple pipelines), you can do so in the Object Type List View by clicking the “**Quick Order Classifier Icon**”.

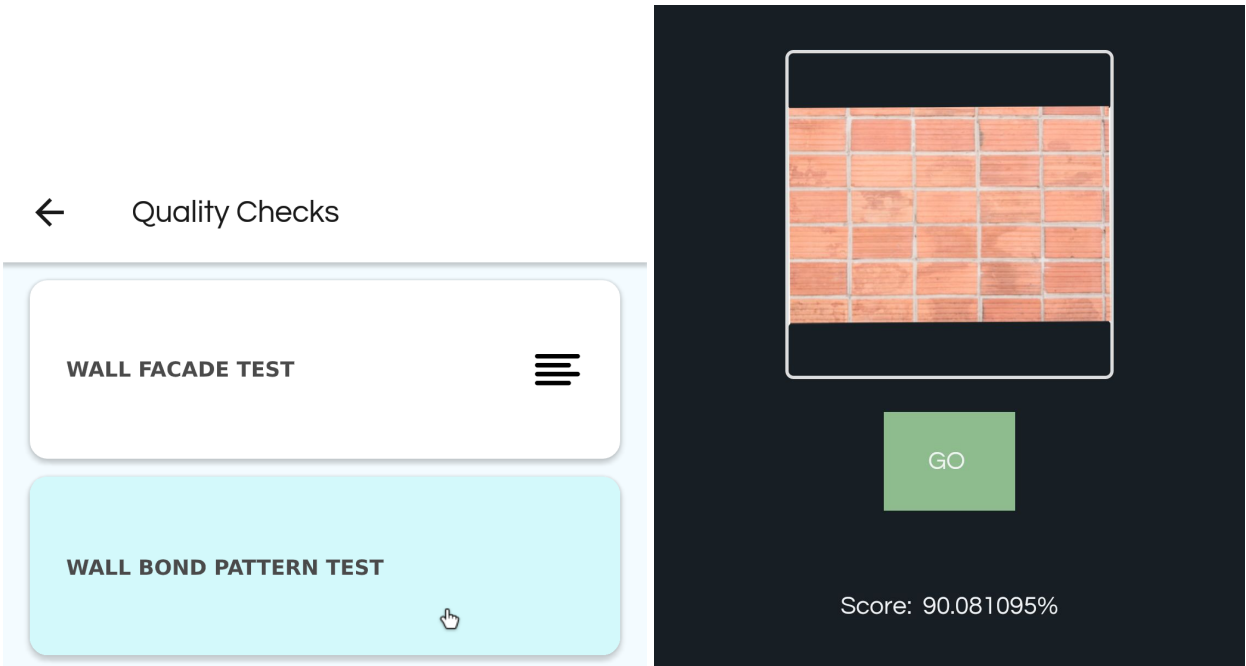
Wall Facade Test	My Wall Test Project	Test User	      
Wall Bond Pattern Test	My Wall Test Project	Test User	      

There you can drag and arrange the Model and Classifiers easily.

STEP 5 - TEST WITH MOBILE APPLICATION

Now, login from the Mobile Application, inside Quality Check you should be able to see “Wall Bond Pattern” in the list. Click the item, upload or capture an image of a brick wall and send to test. If all the Classifiers ran successfully, then it should return the GO/NOGO response.

[More info on Mobile Application](#)



After the test, you can also view the result and pipeline specific output in the View Images/Edit/Info page from the web application.

You should now be able to add other users, link to your project, create multiple object types, classifiers, models and perform checks easily.

Visit [ISAC-SIMO](#) to get started.

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