

# INDUSTRIAL INSPECTION SYSTEM USER MANUAL



MACHINE VISION BASED INDUSTRIAL  
INSPECTION SYSTEM FOR QUALITY ASSURANCE





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## About Console

**Console, the ultimate solution for quality assurance in bottle production. Our state-of-the-art machine vision system is specifically designed to inspect plastic bottle defects with ease and accuracy.**

With its intuitive capabilities and functionalities, the Console is highly configurable to analyze any bottle product based on its unique characteristics. Plus, it's portable and easy to operate within a controlled environment, making it the perfect tool for your quality assurance needs.

Our interactive dashboard provides an executive summary of the complete inspection process on a daily basis, allowing you to easily track trends and identify areas for improvement. With the Console, you can be confident in the quality of your bottle production and streamline your manufacturing process for maximum efficiency.



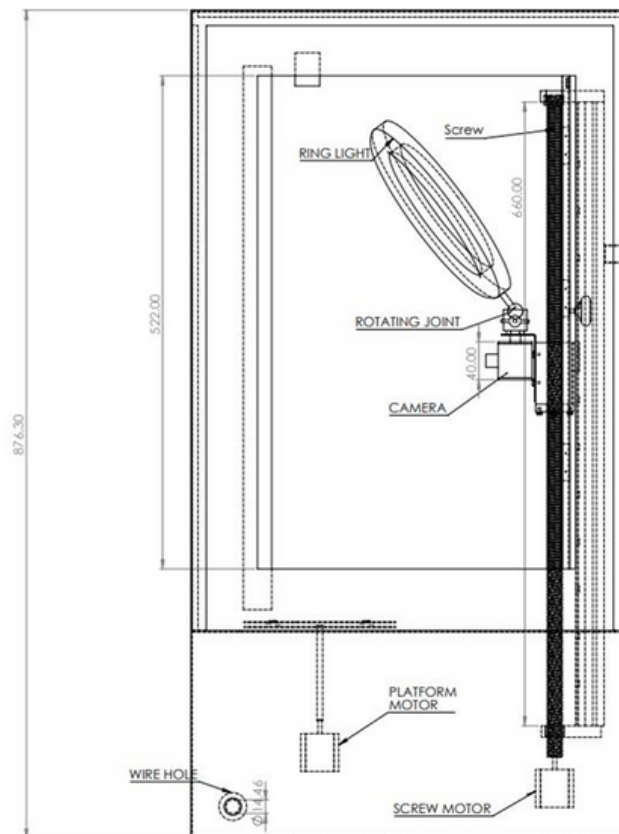
## Features

- 1 **Portable & Easy Installation**
- 2 **Interactive user friendly environment**
- 3 **Utilize Advanced AI tools**
- 4 **Maintain database and reproting**
- 5 **Energy efficient**
- 6 **Improve product quality**
- 7 **Easy maintenance**
- 8 **Cost effective solution**

# Hardware Specifications

## Product material

The console is made up of stainless steel, which is a non-conductive material. The electric wiring within the console is enclosed to prevent any potential short circuitry.



**Hardware Components of Console**

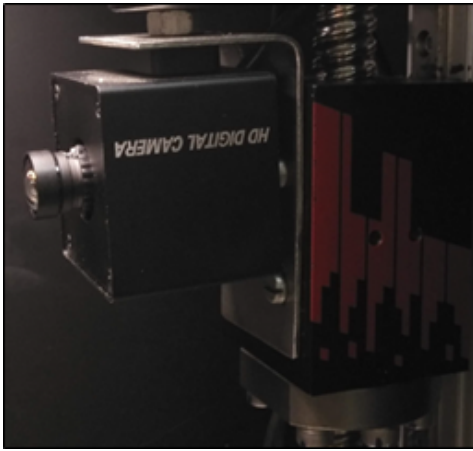
## Product dimension

Console is 34x18 inches<sup>2</sup> in dimensions with a depth of 10 inches

## Product Components

The product has the following major hardware Components.

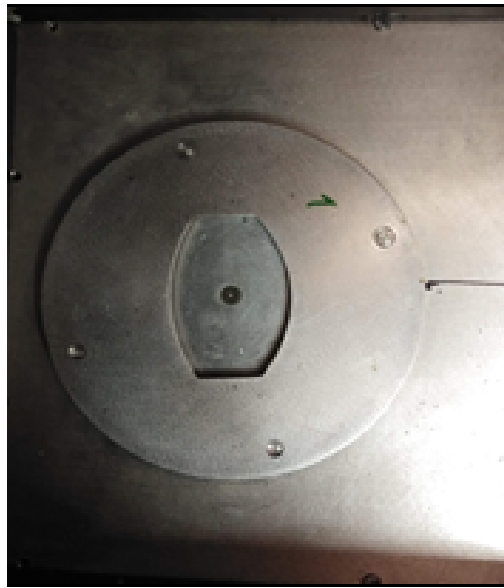
- Industrial camera
- illumination setup
- Motor Control circuitry



**Industrial Camera**



**Illumination setup: Flexible ring light**



**Rotatory base  
(motors)**

## Power Specifications

Power Supply Requirements for individual component:

#	Component	operational Voltage (DC)
1	Camera	5V
2	Ring Light	5V
3	Motors	12V

# Application Environment

## Development Stack

The Console has been developed using the following stack:

### Frontend

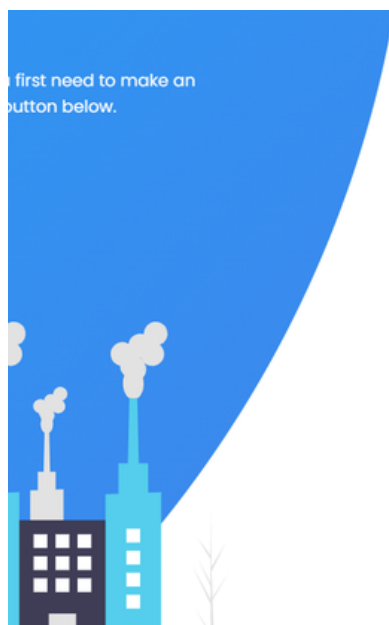
- Html
- CSS
- JavaScript
- Google Charts

### Backend

- Ajax
- Python

## Administration


Administration provides you with two options: signin option



**Machine vision based industrial  
Inspection system for quality  
assurance.**

### Sign In

 Username

 Password

LOGIN

- In the login form enter the username and password and press login button.



# Console Dashboard

Dashboard provides you with various visuals to analyze the bottle product.

## Inspection Summary

- Inspection Summary page depicts about the product being acceptable, marginal and unacceptable in pie-chart and line visuals as shown below.

*Note:*

Console dashboard provides the user with dual modes i.e, light mode and dark mode for better experience.



## Batch Summary

Batch Summary page lets the user select the defect, periodical and its type from the dropdown options and also lets the user to view, generate and email the report respectively as shown below:



Defect dropdown lets the user select from either:

- Dent on bottle
- Scuff on bottle
- Product on bottle

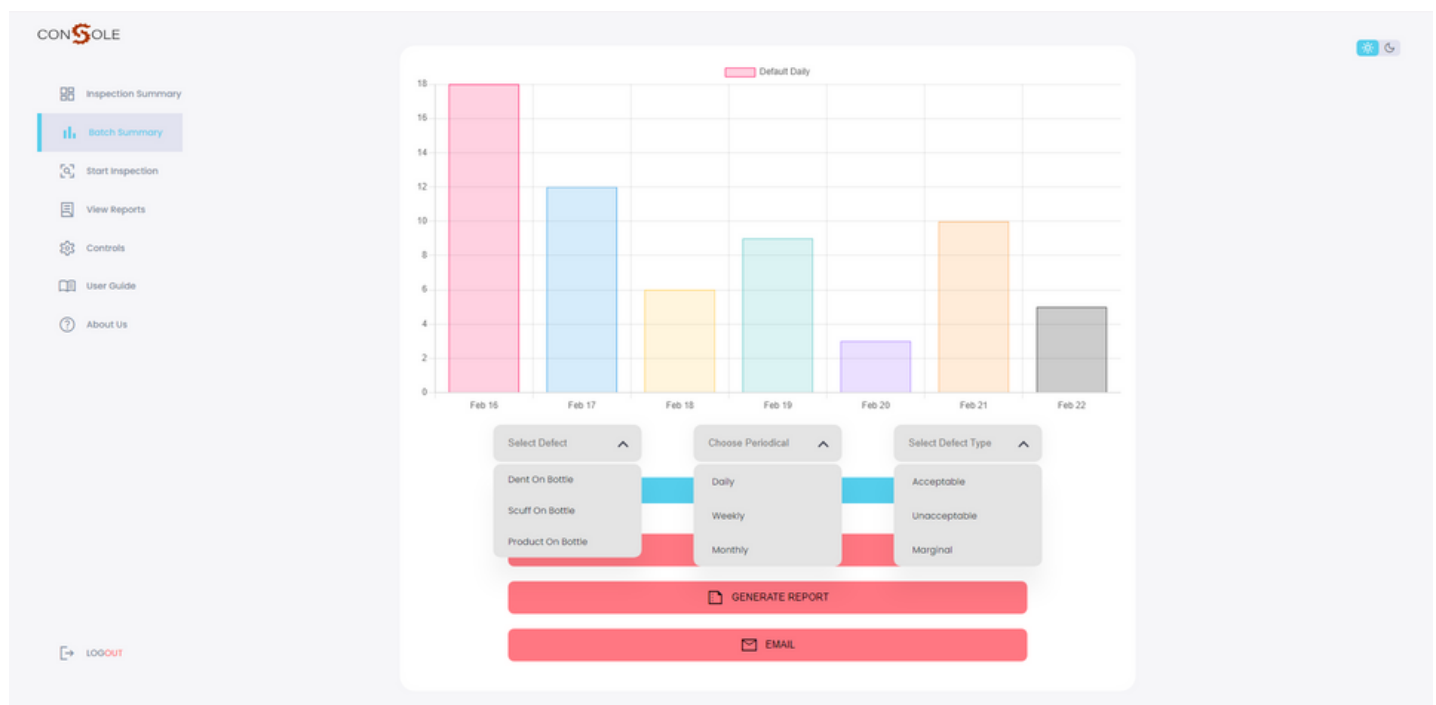
Periodical dropdown lets the user select from either:

- Daily
- Weekly
- Monthly

Defect Type dropdown lets the user select from either:

- Acceptable
- Marginal
- Unacceptable

After selecting form the dropdown options the user clicks on the update button which updates the bar chart as show below:



## Start Inspection

Start Inspection page lets the user capture bottle image using the camera.

### Select Camera Dropdown

Select Camera dropdown depicts all the available camera in the dropdown options.

### Select Bottle Type Dropdown

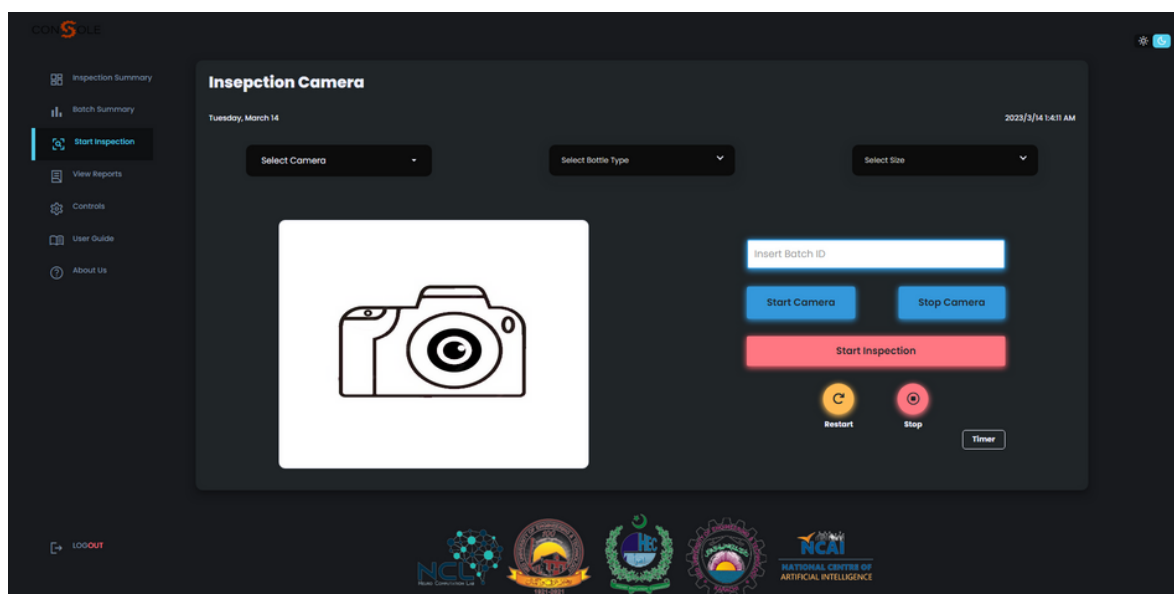
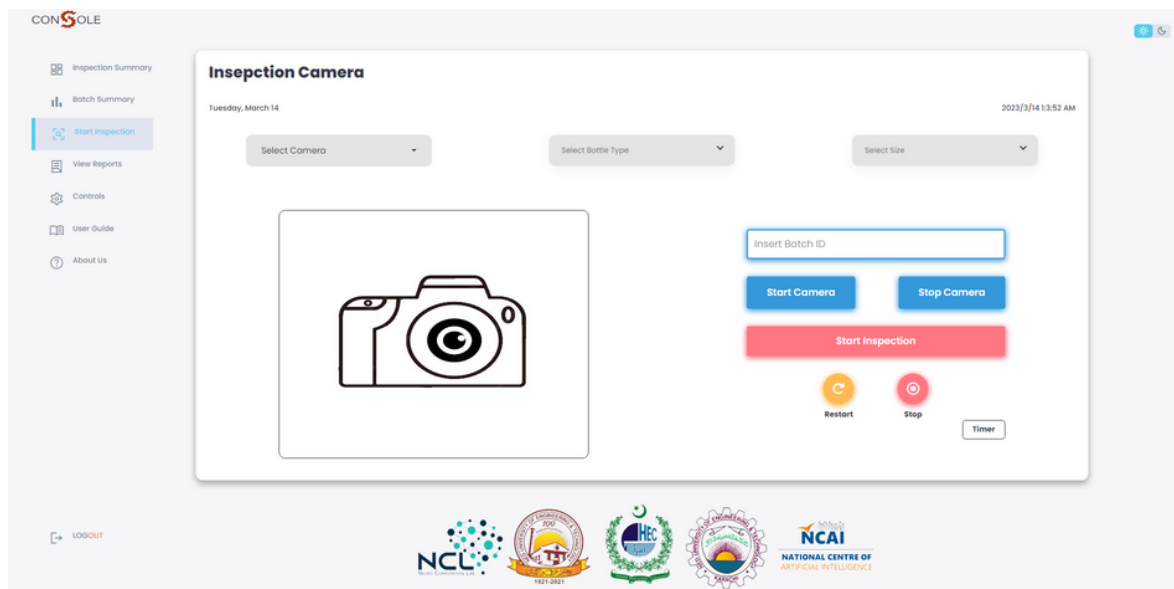
Select Bottle type dropdown lets the user select the shampoo bottle from the given dropdown options i.e. Head n Shoulders, Pantene.

### Select Size Dropdown

Select Size dropdown lets the user select the size of the shampoo bottle either it's small, medium or large.

### Inspection

- Inspection first lets the user insert the batch ID.
- The user then starts the camera after selecting the camera from the available dropdowns, also the user can stop the camera at any time.
- After taking picture the user starts the inspection of the captured bottle image.
- The user is able to restart and stop the inspection at any time.



## View Reports

View Report page provides the user with the table interface of all the inspections that are done with their ID, status, result, the time the inspection was examined at and a preview icon as shown below:

CONSOLE

Inspection Summary

Batch Summary

Start Inspection

**View Reports**

Controls

User Guide

About Us

LOGOUT

INSPECTION REPORT

Search Data...

Bottle ID	Status	Result	Examined At	Preview
1	True	Acceptable	July 29, 2022, 6:08 a.m.	
2	True	Marginal	July 6, 2022, 7:08 a.m.	
3	False	Unacceptable	July 6, 2022, 7:09 a.m.	
4	True	Marginal	July 6, 2022, 7:09 a.m.	
5	True	Acceptable	July 6, 2022, 7:09 a.m.	
6	False	Unacceptable	July 6, 2022, 7:09 a.m.	
7	True	Acceptable	July 6, 2022, 7:09 a.m.	
8	True	Marginal	July 6, 2022, 7:09 a.m.	
9	False	Unacceptable	July 6, 2022, 7:09 a.m.	
10	True	Marginal	July 6, 2022, 7:09 a.m.	

CONSOLE

Inspection Summary

Batch Summary

Start Inspection

**View Reports**

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6	False	Unacceptable	July 6, 2022, 7:09 a.m.	
7	True	Acceptable	July 6, 2022, 7:09 a.m.	
8	True	Marginal	July 6, 2022, 7:09 a.m.	
9	False	Unacceptable	July 6, 2022, 7:09 a.m.	
10	True	Marginal	July 6, 2022, 7:09 a.m.	

- View Report page also provides the user with search functionality so the user can search for any inspection with its details as shown in the fig below:

The screenshot shows the 'CONSOLE' application interface. On the left is a sidebar with navigation links: Inspection Summary, Batch Summary, Start Inspection, View Reports (highlighted), Controls, User Guide, and About Us. At the bottom left is a 'LOGOUT' button. The main content area is titled 'INSPECTION REPORT' and features a search bar with the text 'Marginal'. Below the search bar is a table with the following data:

Bottle ID	Status	Result	Examined At	Preview
2	True	Marginal	July 6, 2022, 7:08 a.m	🔍
4	True	Marginal	July 6, 2022, 7:09 a.m	🔍
8	True	Marginal	July 6, 2022, 7:09 a.m	🔍
10	True	Marginal	July 6, 2022, 7:09 a.m	🔍

- It also provides the user to export the table in multiple formats i.e. PDF, CSV and Excel. Also the user can print the table or can email it.

This screenshot shows the 'CONSOLE' application interface with the 'INSPECTION REPORT' table. The search bar now contains 'Search Data...'. The table contains 10 rows of data. An 'Export As' dropdown menu is open on the right side of the table, showing options: PDF, CSV, EXCEL, PRINT, and EMAIL. The table data is as follows:

Bottle ID	Status	Result	Examined At	Preview
1	True	Acceptable	July 29, 2022, 6:08 a.m	🔍
2	True	Marginal	July 6, 2022, 7:08 a.m	🔍
3	False	Unacceptable	July 6, 2022, 7:09 a.m	🔍
4	True	Marginal	July 6, 2022, 7:09 a.m	🔍
5	True	Acceptable	July 6, 2022, 7:09 a.m	🔍
6	False	Unacceptable	July 6, 2022, 7:09 a.m	🔍
7	True	Acceptable	July 6, 2022, 7:09 a.m	🔍
8	True	Marginal	July 6, 2022, 7:09 a.m	🔍
9	False	Unacceptable	July 6, 2022, 7:09 a.m	🔍
10	True	Marginal	July 6, 2022, 7:09 a.m	🔍

- It also provides the user with the knowledge of the defect type and its result on a popup when licked on a preview icon.

**CONSOLE**

Inspection Summary  
Batch Summary  
Start Inspection  
**View Reports**  
Controls  
User Guide  
About Us

**INSPECTION REPORT**

Search Data...

Bottle ID	Status	Result	Examined At	Preview
1	True	Acceptable	July 29, 2022, 6:08 a.m.	👁
2	True	Marginal	July 6, 2022, 7:08 a.m.	👁
3	False	Acceptable	July 6, 2022, 7:09 a.m.	👁
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5	True	Acceptable	July 6, 2022, 7:09 a.m.	👁
6	False	Acceptable	July 6, 2022, 7:09 a.m.	👁
7	True	Acceptable	July 6, 2022, 7:09 a.m.	👁
8	True	Acceptable	July 6, 2022, 7:09 a.m.	👁
9	False	Unacceptable	July 6, 2022, 7:09 a.m.	👁
10	True	Marginal	July 6, 2022, 7:09 a.m.	👁

Cap Not Seated Acceptable ✓  
Dent On Bottle Acceptable ✓  
Scuff On Bottle Acceptable ✓  
Product On Bottle Acceptable ✓

Okay

LOGOUT

## Controls

- The Controls page allows the user to set the camera by adjusting the camera up, down, left or right to capture the perfect image of the bottle.

**CONSOLE**

Inspection Summary  
Batch Summary  
Start Inspection  
View Reports  
**Controls**  
User Guide  
About Us

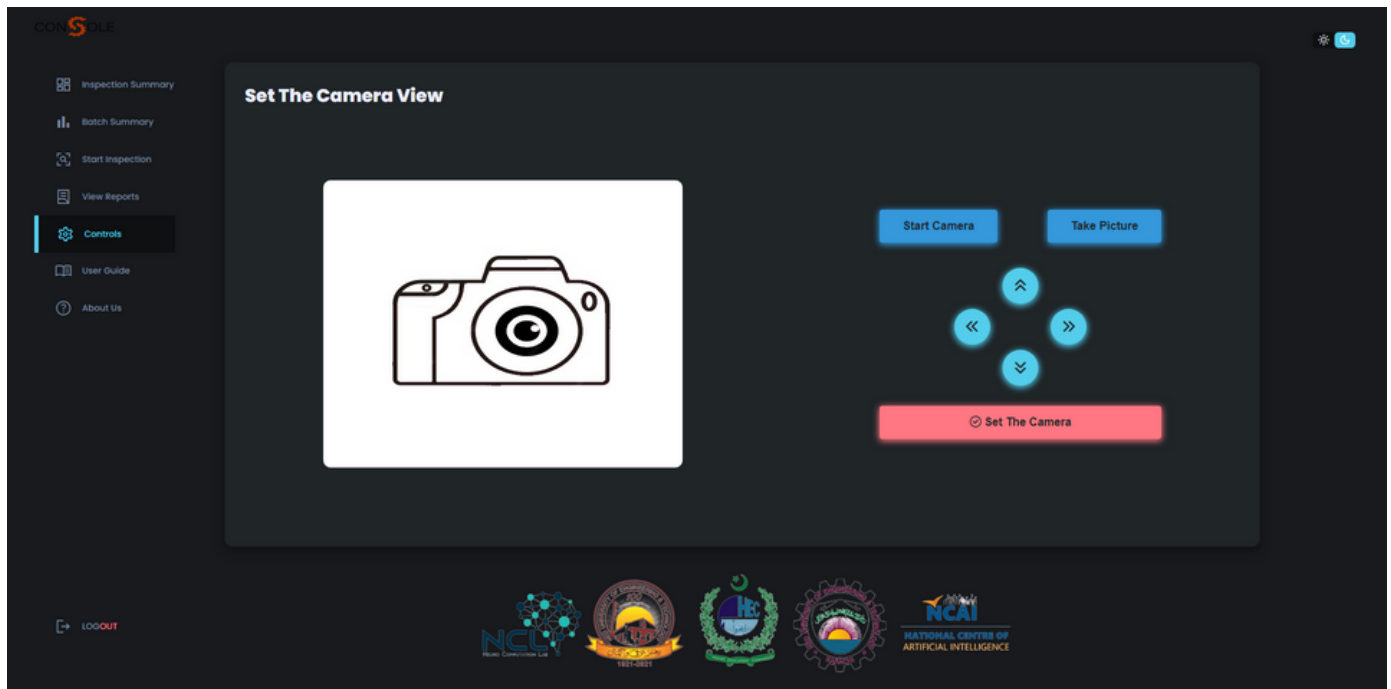
**Set The Camera View**

Start Camera Take Picture

Set The Camera

LOGOUT

NCLU  
1921-2021  
HEC  
NCAI  
NATIONAL CENTRE OF ARTIFICIAL INTELLIGENCE



## LOGOUT

- The user can logout of the dashboard by clicking on the log out button and will be redirected to the login page.



# CONSOLE TEAM



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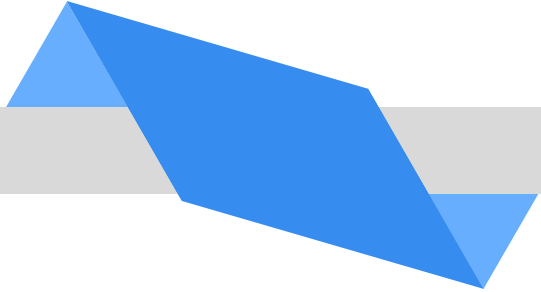
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**<https://nedncl.com/console/>**