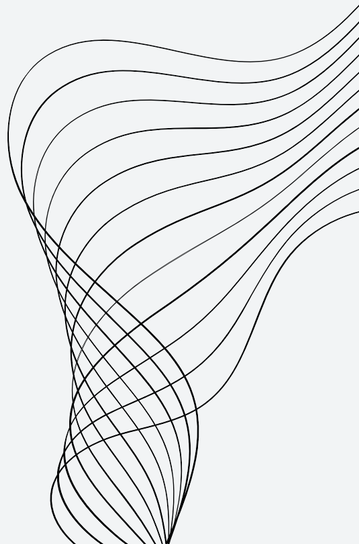
UQAC

8INF876 - CLOUD COMPUTING

PROFESSEUR: **HAMID MCHEICK, PHD**

PRÉSENTÉ PAR: **BECAYE BALDE**

DÉPLOIEMENT D'UNE APPLICATION DE DÉTECTION D'ARMES À FEU



PLAN

01 INTRODUCTION

APERÇU GÉNÉRAL

Motivation du projet

Description du projet

02 CONCEPTION

SYSTÈME

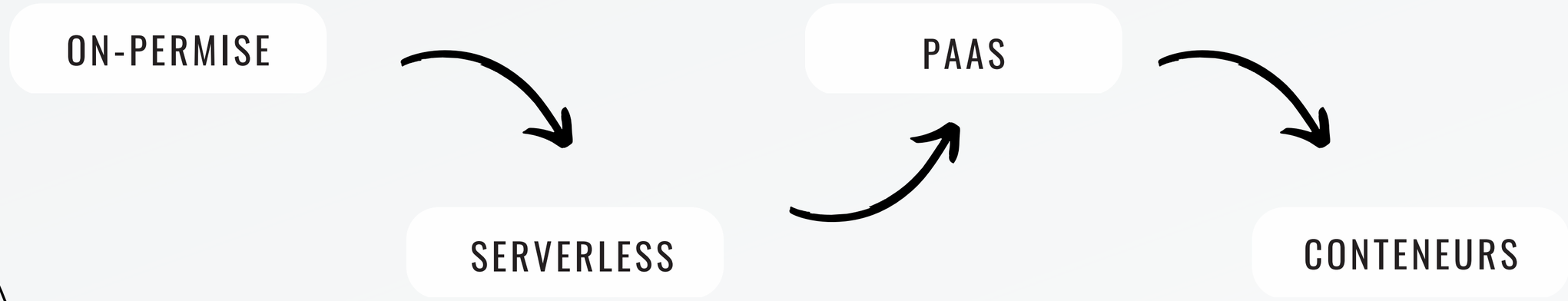
Modèle

API

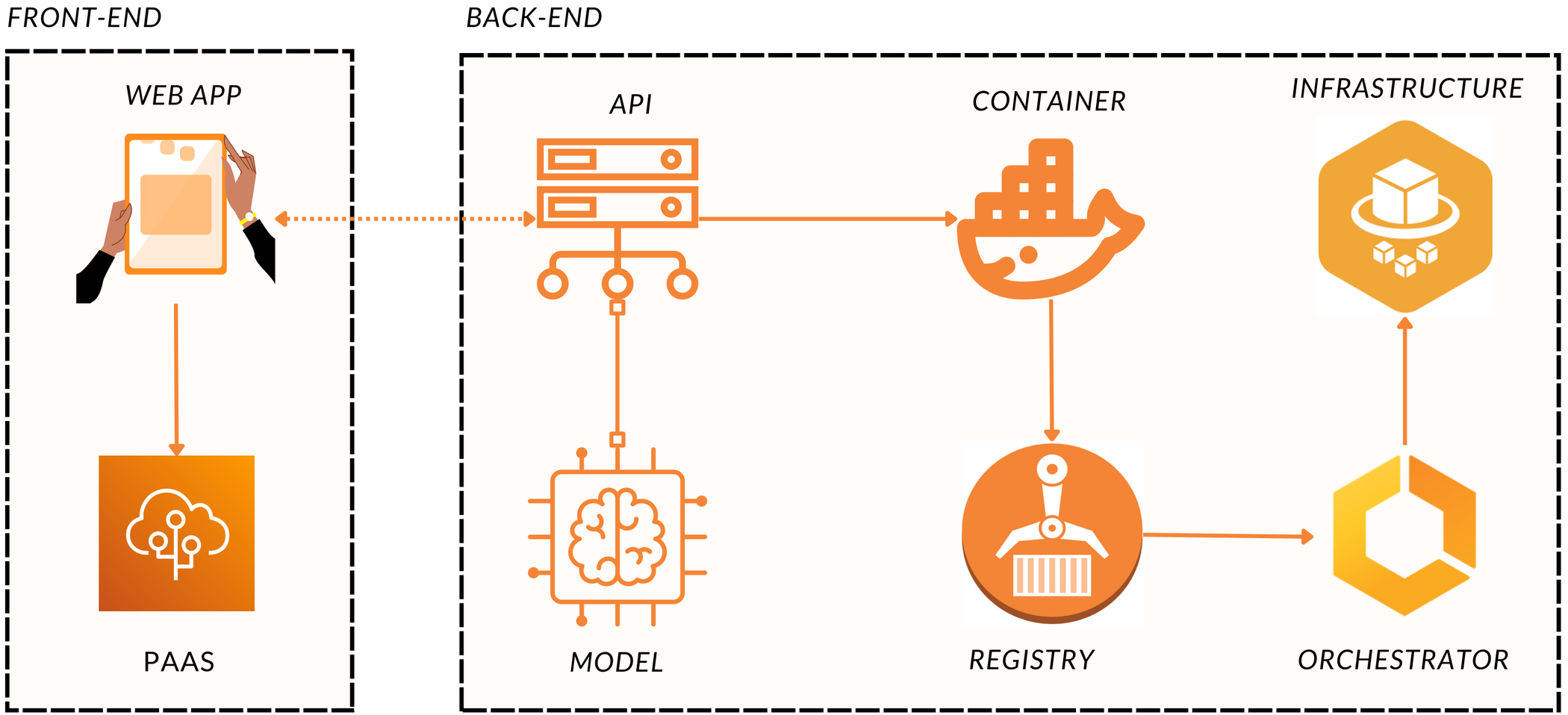
Application Web

OUTILS EXISTANTS

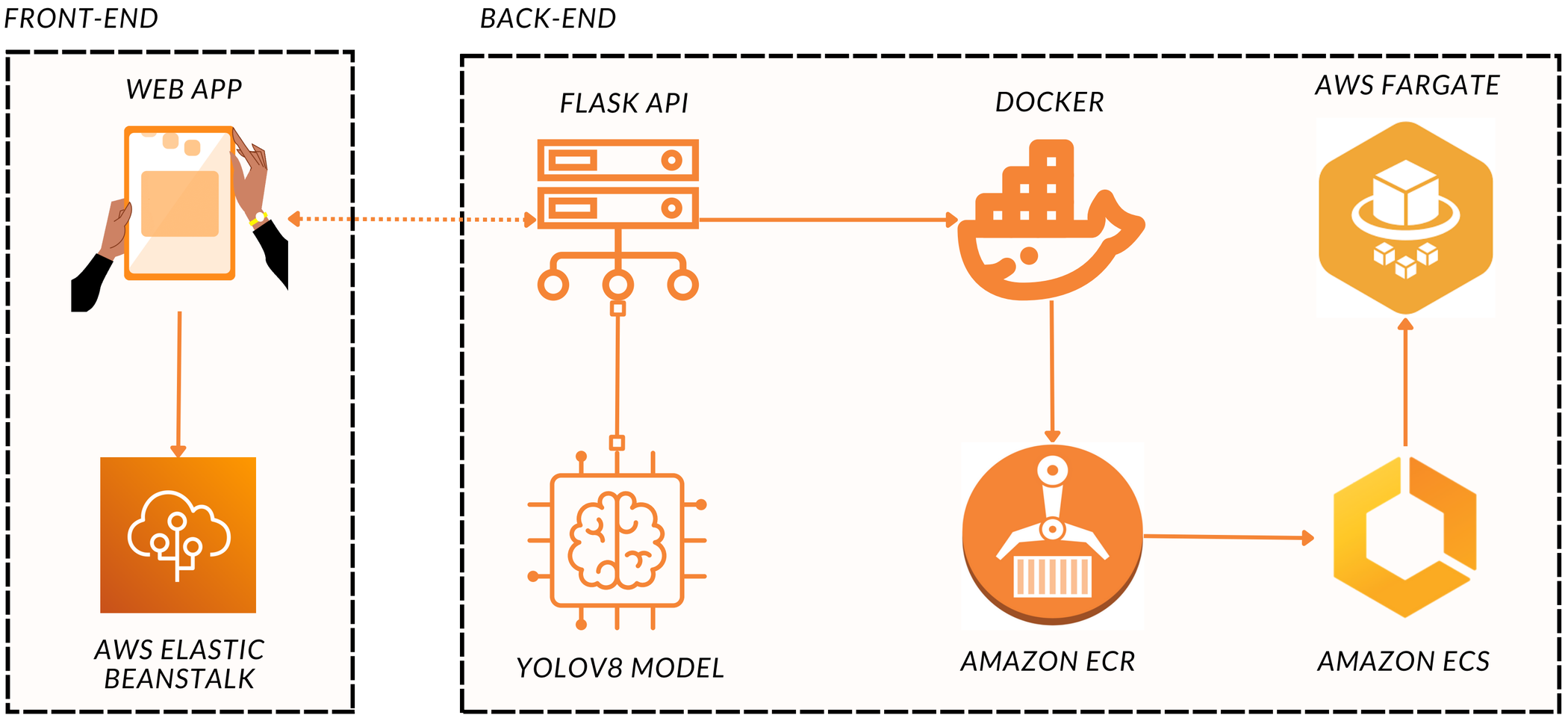
- Coût
- Scalabilité
- Praticabilité



ARCHITECTURE DU SYSTÈME



OUTILS UTILISÉS



03 IMPLÉMENTATION

BACK-END

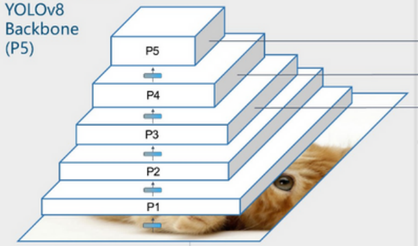
LE MODÈLE

YOLOv8

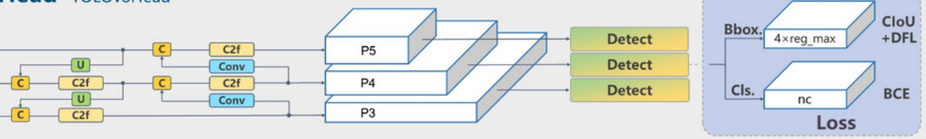
RangeKing

Backbone

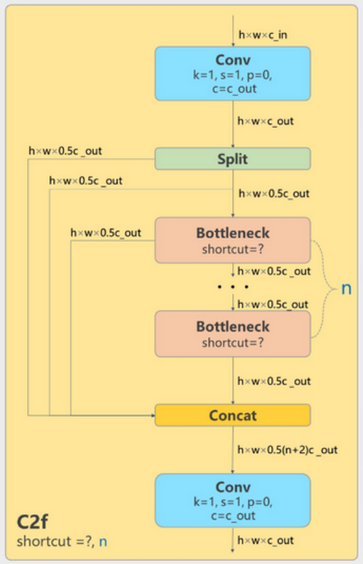
YOLOv8 Backbone (P5)



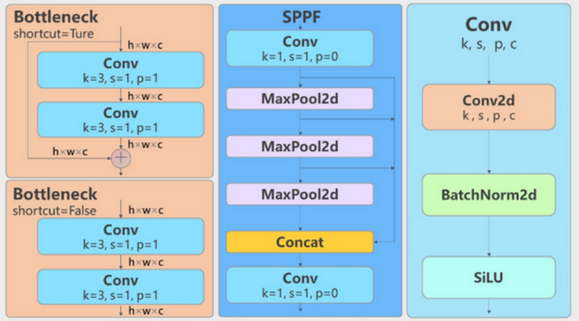
Head YOLOv8Head

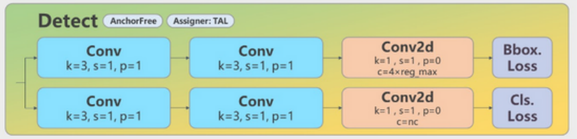


Details



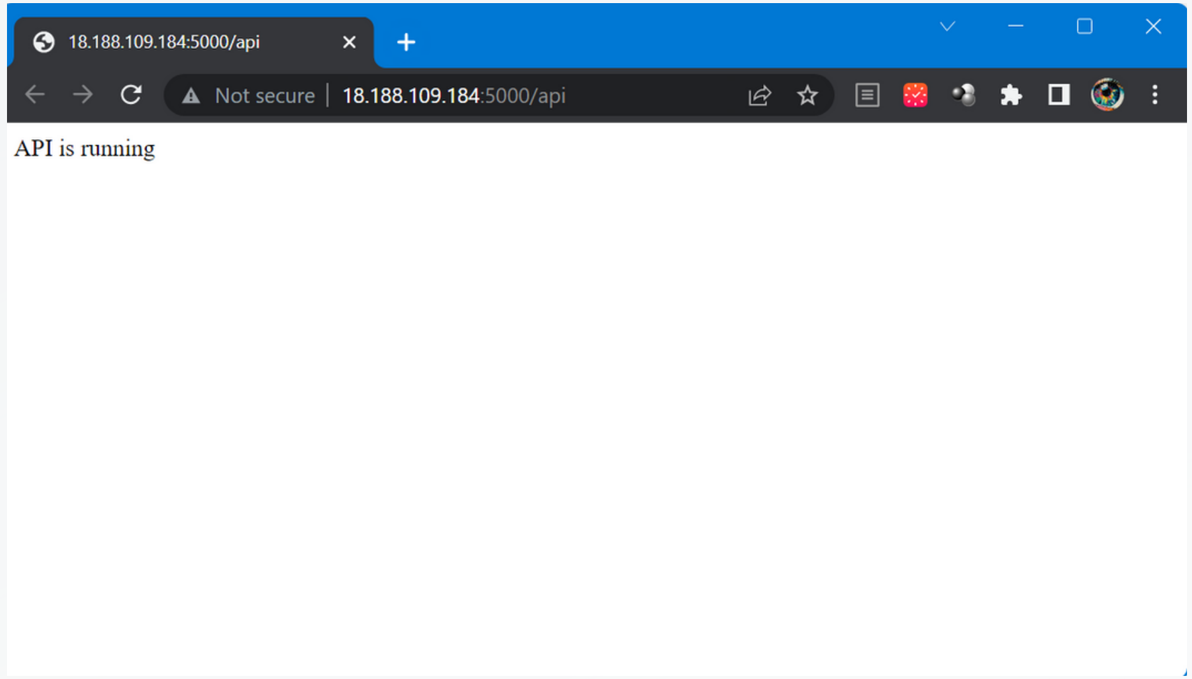
model	d (depth_multiple)	w (width_multiple)	r (ratio)
n	0.33	0.25	2.0
s	0.33	0.50	2.0
m	0.67	0.75	1.5
l	1.00	1.00	1.0
x	1.00	1.25	1.0





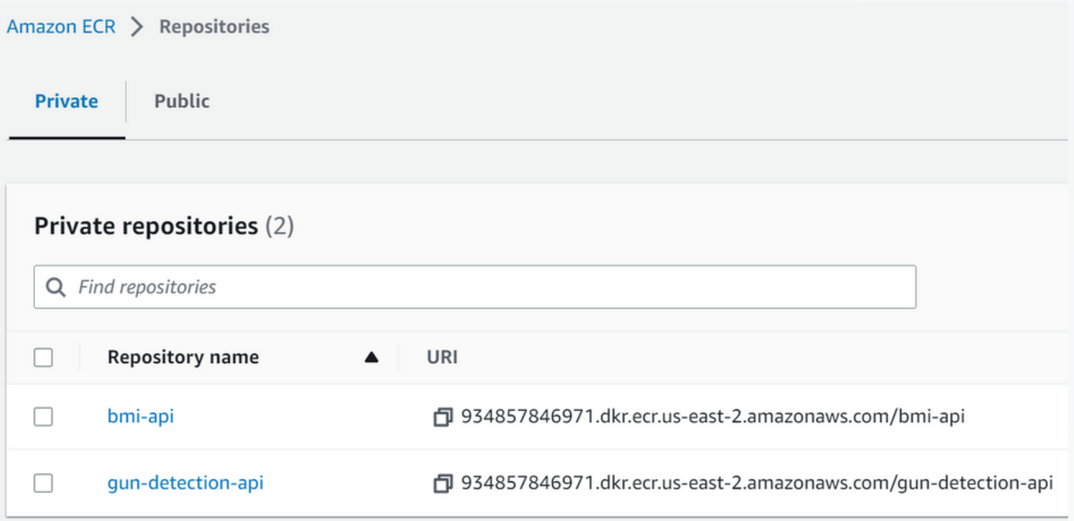
L'API FLASK

```python
@app.route('/api')
def api_home():
    return 'API is running'

@app.route('/api/predict', methods=['POST'])
def api_predict():
    """
    Process the uploaded file and return the prediction as a base64 image
    """
    # Get the file from the request
    file = request.files['file']

    # Read the image and preprocess it
    image = processor.process_image(file)
    cv2.imwrite('img.png', image)

    # Make a prediction
    predicted_image = model.predict_image(image)

    # Convert predicted image to Base64
    encoded_image_data = processor.image_to_base64(predicted_image)

    return str(encoded_image_data)
```

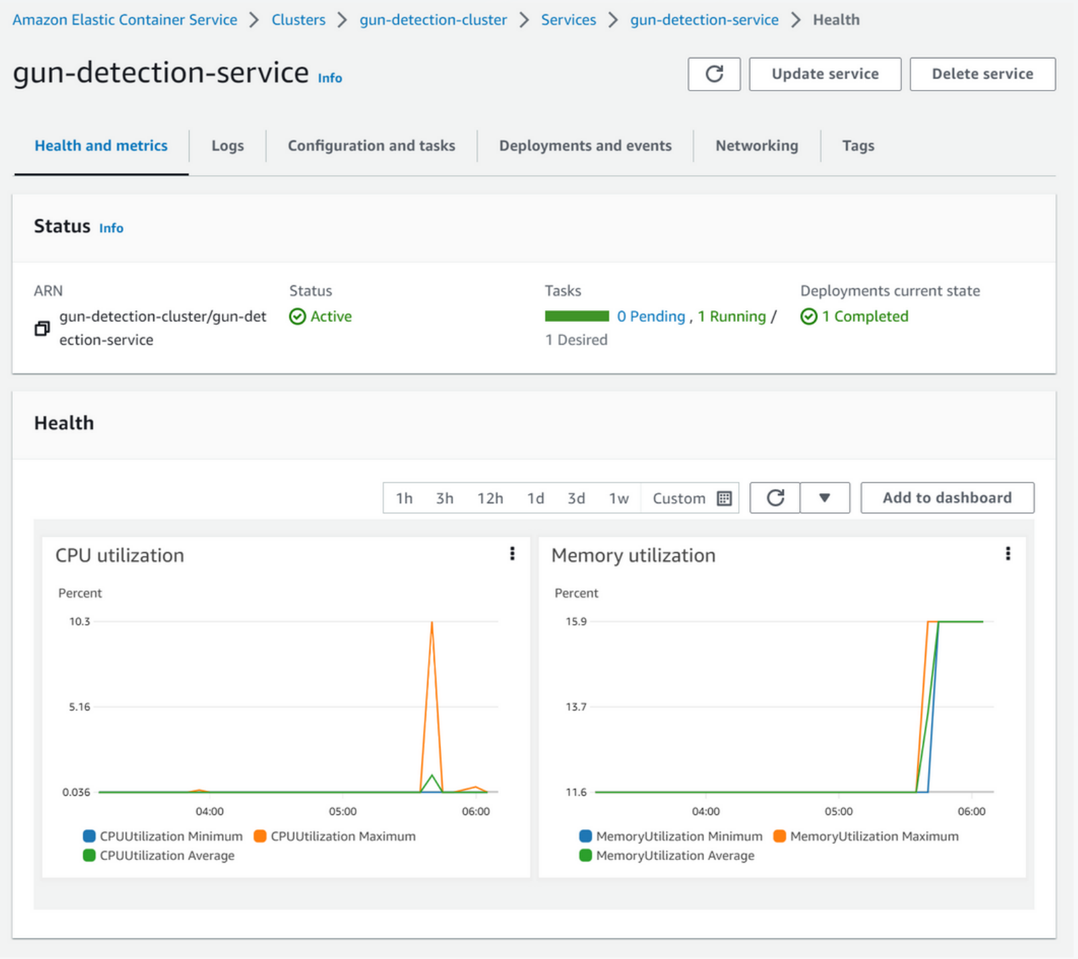


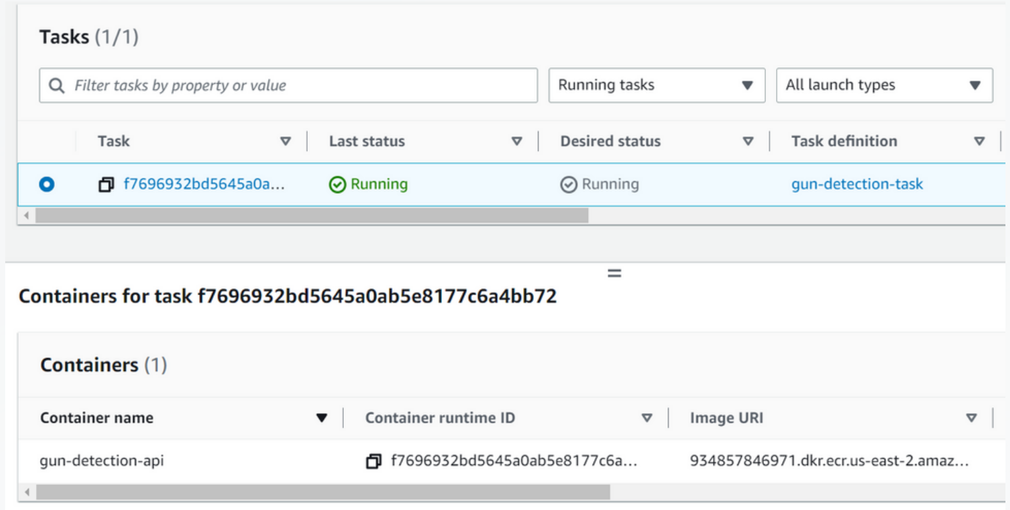
LE CONTENEUR

```dockerfile
# Choose a lightweight version of Python
FROM python:3.11.3-slim-buster

# Set Working directory
WORKDIR /app

# Copy requirements
COPY requirements.txt /app/

# OpenCV Dependencies
RUN apt-get update && apt-get install -y libgl1-mesa-glx libglib2.0-0

# No caching to keep docker image small
 RUN pip3 install --no-cache-dir -r requirements.txt

# Copy files into the app folder
COPY . /app

# Expose the port where the Flask app will run
EXPOSE 5000

# Run the appdoc
CMD [ "python3", "-m" , "flask", "run", "--host=0.0.0.0"]
```



LE CLUSTER


Amazon Elastic Container Service > Clusters > gun-detection-cluster > Services > gun-detection-service > Health
gun-detection-service Info
Update service
Delete service
Health and metrics
Logs
Configuration and tasks
Deployments and events
Networking
Tags
Status Info
ARN
gun-detection-cluster/gun-detection-service
Status
Active
Tasks
0 Pending , 1 Running /
1 Desired
Deployments current state
1 Completed
Health
1h 3h 12h 1d 3d 1w Custom
Add to dashboard
CPU utilization
Percent
10.3
5.16
0.036
04:00
05:00
06:00
CPUUtilization Minimum
CPUUtilization Maximum
CPUUtilization Average
Memory utilization
Percent
15.9
13.7
11.6
04:00
05:00
06:00
MemoryUtilization Minimum
MemoryUtilization Maximum
MemoryUtilization Average


Tasks (1/1)
Filter tasks by property or value
Running tasks
All launch types
Task
Last status
Desired status
Task definition
f7696932bd5645a0a...
Running
Running
gun-detection-task
Containers for task f7696932bd5645a0ab5e8177c6a4bb72
Containers (1)
Container name
Container runtime ID
Image URI
gun-detection-api
f7696932bd5645a0ab5e8177c6a...
934857846971.dkr.ecr.us-east-2.amaz...

L'INFRASTRUCTURE

AMAZON EC2

Service configuration Info

Service ARN
gun-detection-cluster/gun-detection-service

Service Connect Info
Configure

Task definition: revision
gun-detection-task:2

Capacity provider
FARGATE

Service type
REPLICA

Created by
arn:aws:iam::934857846971:root

▶ Service discovery

Auto Scaling

Desired tasks
1

Min tasks
-

No Auto Scaling resources configured for this service.

gun-detection-service Info

Update service | Delete service

Health and metrics | Logs | Configuration and tasks | Deployments and events | Networking | Tags

Deployment configuration Info

View pipelines

Deployment status	Deployment type	Platform version	Min and max running tasks
Completed	ECS	LATEST	100% min and 200% max

▶ Deployment failure detection

▼ Task placement strategy and constraints

Task placement strategy	Task placement constraint
-	-

Deployments (1) Info

Filter deployments

1

Start date	Status	Failed tasks	Tasks	Version	Task definition	Revision	Last deployment
4/23/2023, 2:55:20 AM	Primary 100%	0	1 Running | 0 Pending | 1 Desired	1.4.0	gun-detection-task	2	Completed

Events (6)

Filter events by value

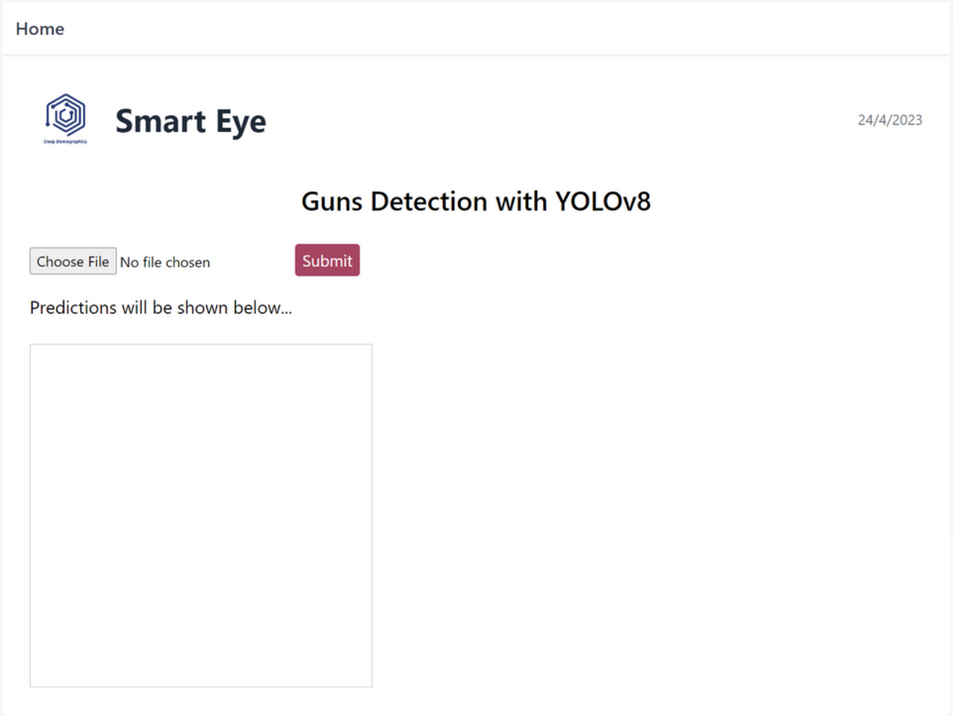
1

Started at	Message	Event ID
4/23/2023, 9:01:27 PM	service gun-detection-service has reached a steady state.	26da137b-b522-40e3-9dd2-1f707fe78ffa
4/23/2023, 3:00:59 PM	service gun-detection-service has reached a steady state.	f276cbac-957f-49da-80c4-04a8a6aedd74
4/23/2023, 9:00:56 AM	service gun-detection-service has reached a steady state.	789efa63-2aed-4c9a-a983-7a024ce06e86
4/23/2023, 3:00:27 AM	service gun-detection-service has reached a steady state.	02ec08a2-4525-422f-88bd-3fe2963850ec
4/23/2023, 3:00:27 AM	service gun-detection-service deployment ecs-svc/4147796273202384607 deployment completed.	3e99343d-a6af-4db7-8d38-5f60826a4a07
4/23/2023, 2:55:21 AM	service gun-detection-service has started 1 tasks: task f7696932bd5645a0ab5e8177c6a4bb72.	5ff32cfa-6a3a-4990-810f-d17a08a9caeb

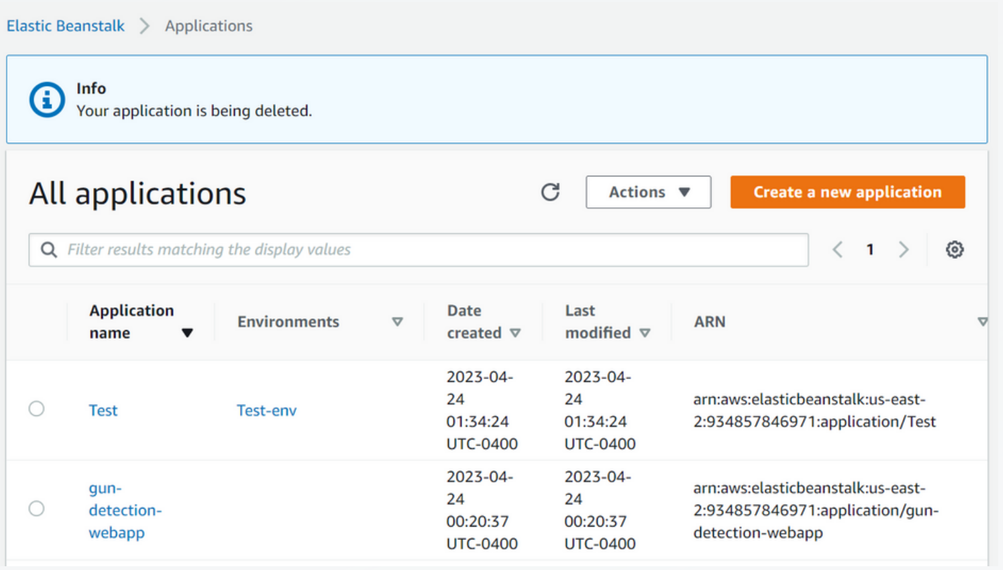
FRONT-END

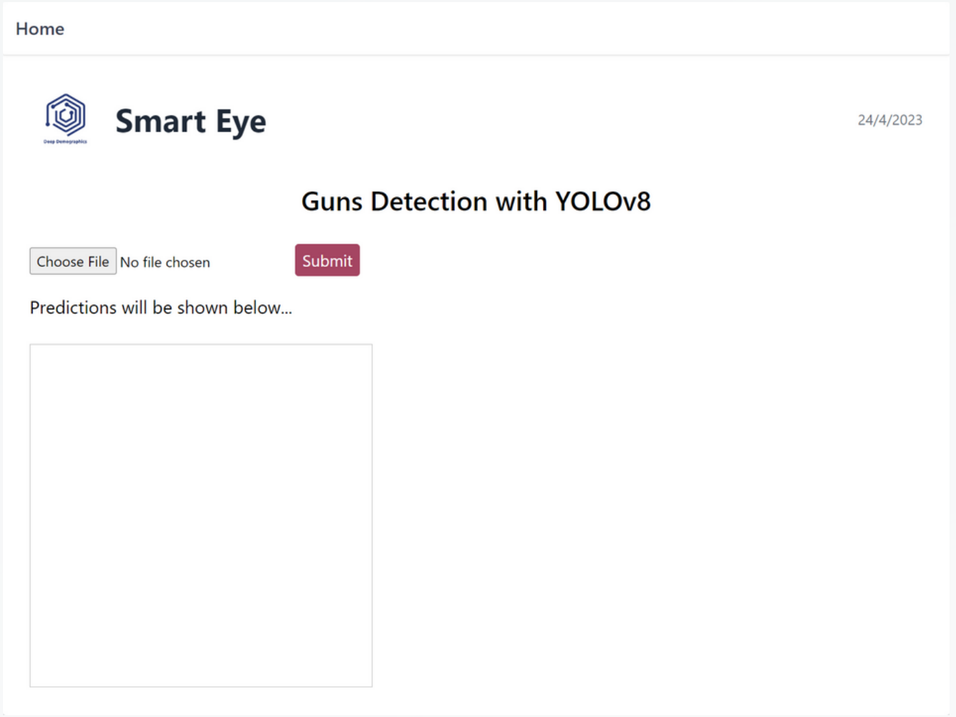
L'INTERFACE

```
const fileInput = document.getElementById('file-input');
const submitBtn = document.getElementById('submit-btn');
const imageOutput = document.getElementById('image-output');

API_URL = 'http://18.188.109.184:5000/api'

submitBtn.addEventListener('click', async (event) => {
    // prevent the page from reloading
    event.preventDefault();

    // get the file and prepare it for sending
    const file = fileInput.files[0];
    const formData = new FormData();
    formData.append('file', file);

    postImage(formData)

});
```



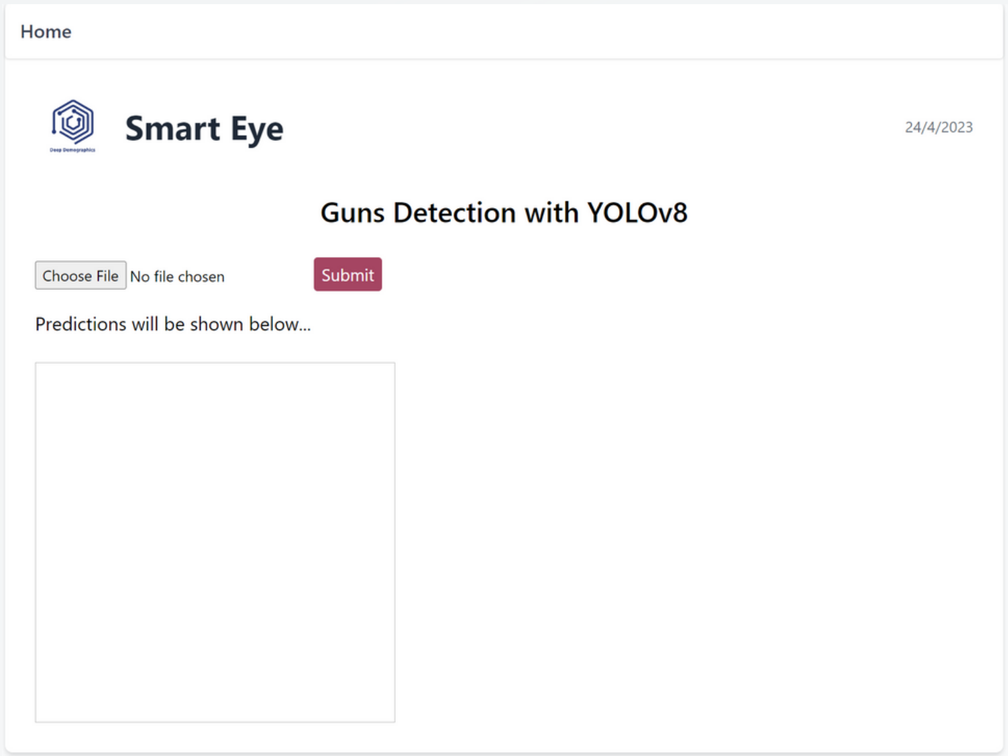
ELASTIC BEANSTALK

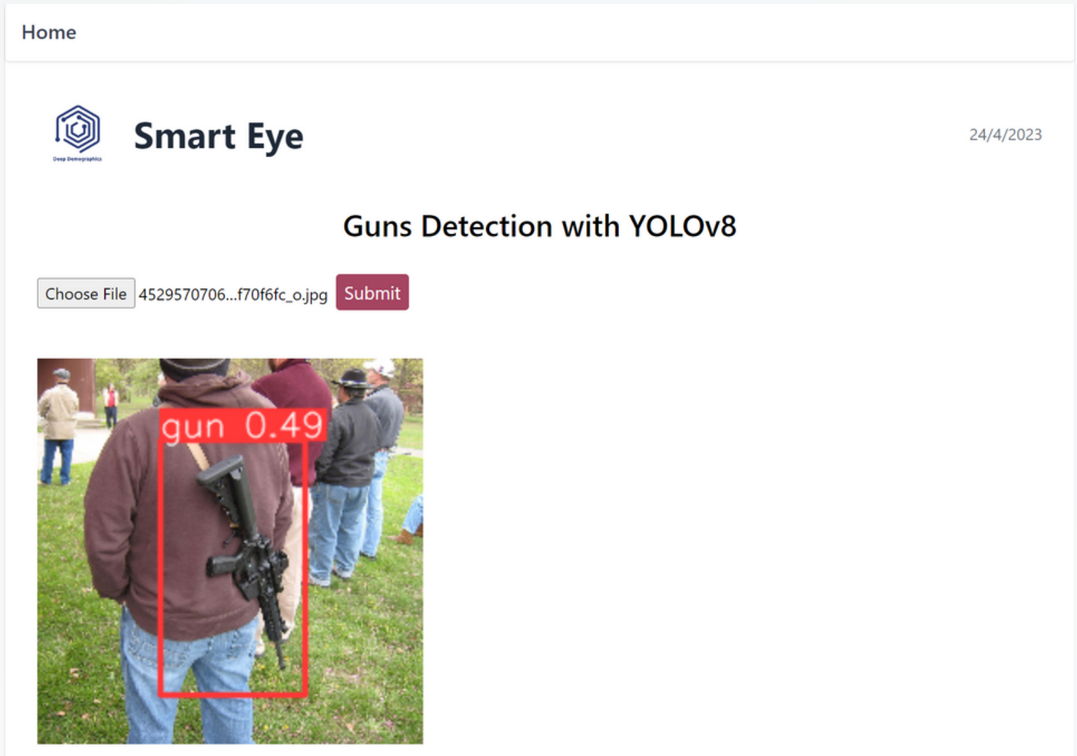




04 TESTS

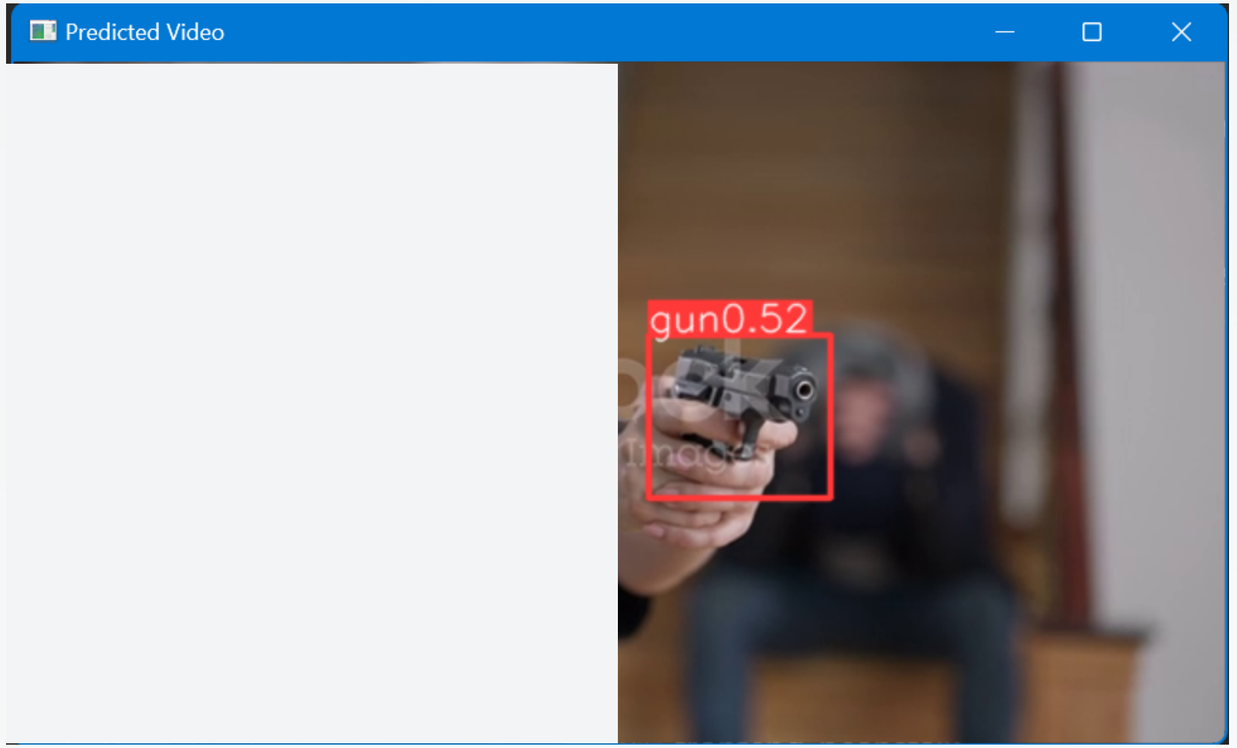
IMAGES


Home
Smart Eye
24/4/2023
Guns Detection with YOLOv8
Choose File
No file chosen
Submit
Predictions will be shown below...


Home
Smart Eye
24/4/2023
Guns Detection with YOLOv8
Choose File
4529570706...f70f6fc_o.jpg
Submit
gun 0.49

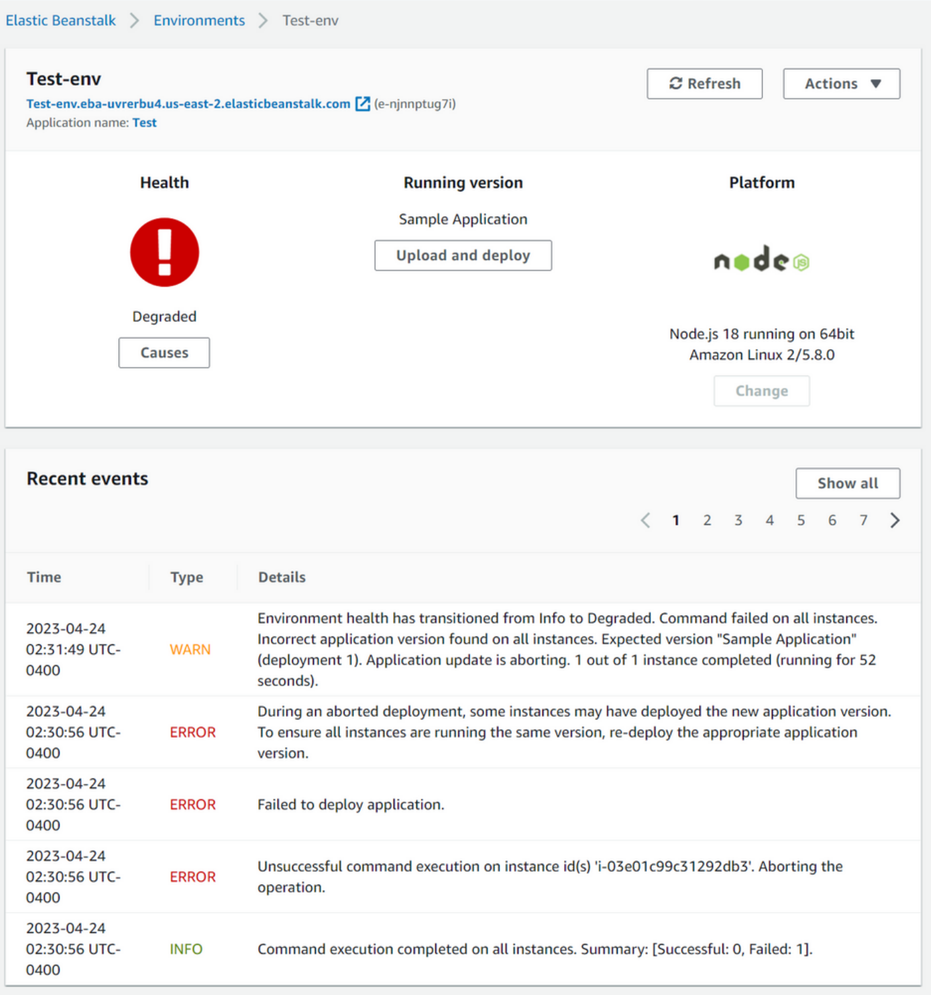
VIDÉOS

VOIR DÉMO



05 OBSTACLES

ELASTIC BEANSTALK



06 CONCLUSION

APPRENSTISSAGES

LESSONS

PERSPECTIVES

MERCI

DE VOTRE ATTENTION ;)