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**Vellore Institute of Technology**  
(Deemed to be University under section 3 of UGC Act, 1956)

## **SCOPE**

**FALL SEMESTER 2025-2026**

### **LAB ASSESSMENT -2**

**Slot: L13+L14**

**Class: VL2025260105679**

**Programme Name & Branch: B.  
Tech CSBS**

**Course code & Title: CBS3005-  
CLOUD, MICROSERVICES AND  
APPLICATIONS LAB BASED  
COMPONENTS**

**Faculty Name: NITHYA K**

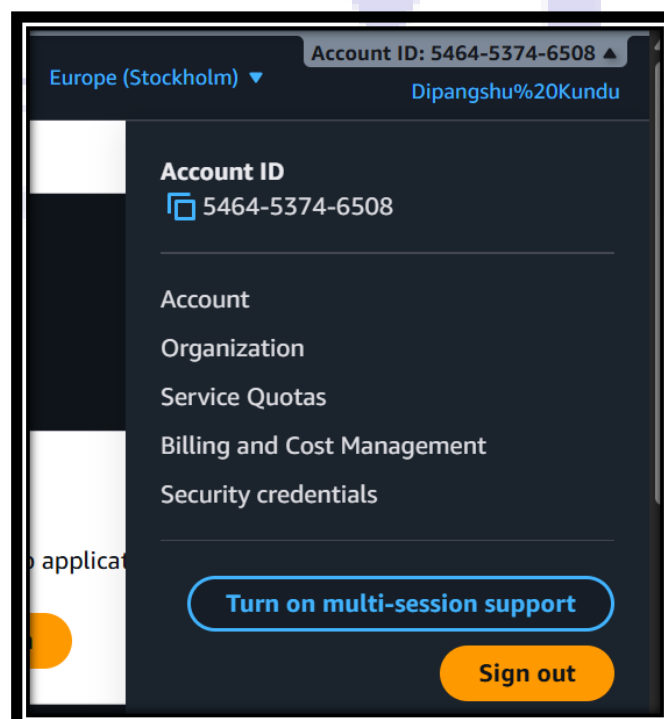
**SUBMITTED BY: -DIPANGSHU  
KUNDU**

**REGISTRATION NUMBER: -  
22BBS0148**

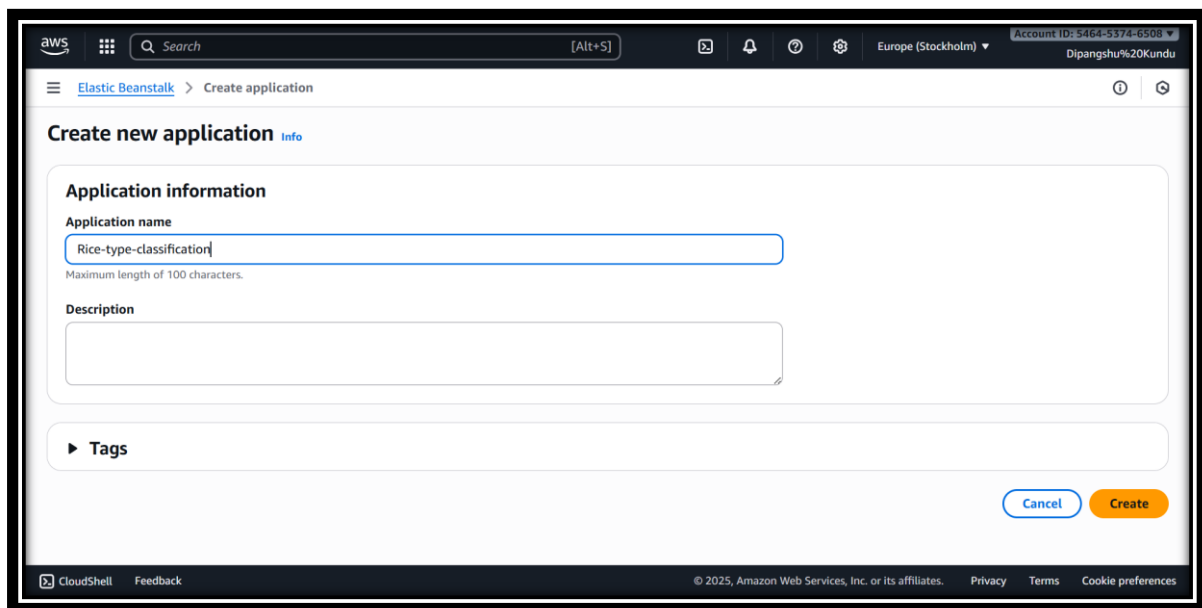
## QUESTION:

- (i) Create a simple web application using your preferred programming language and framework (e.g., Node.js, Python, Java etc.). Ensure the application is fully functional and ready for deployment. Initialize an AWS Elastic Beanstalk environment for your application. Choose the appropriate platform (e.g., Node.js, Python, Java) and configure the environment settings. Package your web application and deploy it to the Elastic Beanstalk environment. Access the deployed web application via the Elastic Beanstalk URL provided. Test its functionality to confirm that the deployment was successful and that the application is accessible and performs as expected.

## SOLUTION: -



## CREATING A NEW APPLICATION



aws Elastic Beanstalk Create application

Account ID: 5464-5374-6508 Europe (Stockholm) Dipangshu%20Kundu

### Create new application [Info](#)

**Application information**

**Application name**

Rice-type-classification

Maximum length of 100 characters.

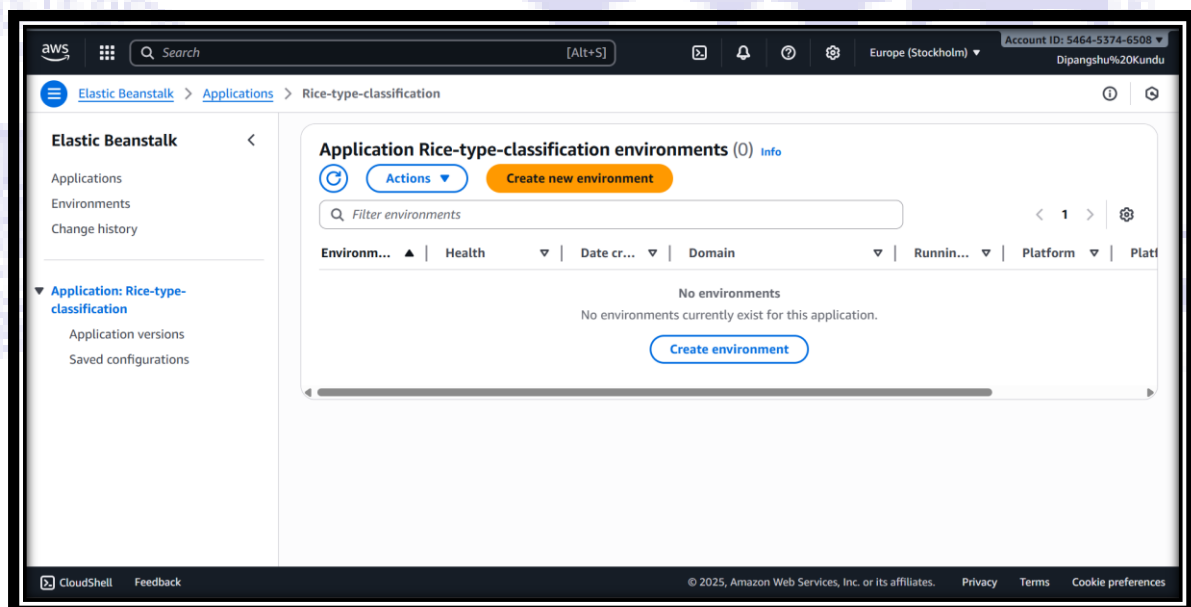
**Description**

► **Tags**

Cancel Create

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## CREATING AND CONFIGURING AN ENVIRONMENT



aws Elastic Beanstalk Applications Rice-type-classification

Account ID: 5464-5374-6508 Europe (Stockholm) Dipangshu%20Kundu

**Elastic Beanstalk**

- Applications
- Environments
- Change history

▼ **Application: Rice-type-classification**

- Application versions
- Saved configurations

### Application Rice-type-classification environments (0) [Info](#)

Actions Create new environment

Filter environments

Environm...	Health	Date cr...	Domain	Runnin...	Platform	Platf
No environments						
No environments currently exist for this application.						

Create environment

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This screenshot shows the 'Configure environment' step in the AWS Elastic Beanstalk console. On the left, a progress bar lists six steps: Step 1 (Configure environment), Step 2 (Configure service access), Step 3 (optional: Set up networking, database, and tags), Step 4 (optional: Configure instance traffic and scaling), Step 5 (optional: Configure updates, monitoring, and logging), and Step 6 (Review). The main content area is titled 'Configure environment' and includes two sections: 'Environment tier' and 'Application information'. The 'Environment tier' section has two radio buttons: 'Web server environment' (selected) and 'Worker environment'. The 'Application information' section has a text input for 'Application name' with the value 'Rice-type-classification' and a 'Maximum length of 100 characters' note. Below this is a section for 'Application tags (optional)'. The footer shows the AWS logo, a search bar, and account information for 'Europe (Stockholm)'.

Step 1  
● **Configure environment**  
○ Step 2  
○ Step 3 - optional  
○ Step 4 - optional  
○ Step 5 - optional  
○ Step 6  
○ Review

### Configure environment [info](#)

**Environment tier** [info](#)  
Amazon Elastic Beanstalk has two types of environment tiers to support different types of web applications.

☒ **Web server environment**  
Run a website, web application, or web API that serves HTTP requests. [Learn more](#)

☐ **Worker environment**  
Run a worker application that processes long-running workloads on demand or performs tasks on a schedule. [Learn more](#)

**Application information** [info](#)

**Application name**  
Rice-type-classification  
Maximum length of 100 characters.

► **Application tags (optional)**

This screenshot shows the 'Environment information' step in the AWS Elastic Beanstalk console. It prompts the user to choose the name, subdomain, and description for the environment. The 'Environment name' section has a text input with the value 'Rice-type-classification-env'. The 'Domain' section has a text input with the value 'flask-aws-deploy' and a dropdown menu showing '.eu-north-1.elasticbeanstalk.com'. A 'Check availability' button is next to the domain. Below this, a green checkmark indicates that 'flask-aws-deploy.eu-north-1.elasticbeanstalk.com is available'. The 'Environment description' section is currently collapsed.

### Environment information [info](#)

Choose the name, subdomain and description for your environment. These cannot be changed later.

**Environment name**  
Rice-type-classification-env  
Must be from 4 to 40 characters in length. The name can contain only letters, numbers, and hyphens. It can't start or end with a hyphen. This name must be unique within a region in your account.

**Domain**  
flask-aws-deploy .eu-north-1.elasticbeanstalk.com [Check availability](#)

✔ flask-aws-deploy.eu-north-1.elasticbeanstalk.com is available

► **Environment description**

This screenshot shows the 'Platform' step in the AWS Elastic Beanstalk console. It allows the user to select the platform, branch, and version for the environment. The 'Platform' section has a dropdown menu with the value 'Python'. The 'Platform branch' section has a dropdown menu with the value 'Python 3.13 running on 64bit Amazon Linux 2023'. The 'Platform version' section has a dropdown menu with the value '4.7.1 (Recommended)'.






### Platform [info](#)

**Platform**  
Python

**Platform branch**  
Python 3.13 running on 64bit Amazon Linux 2023

**Platform version**  
4.7.1 (Recommended)

## STRUCTURE OF FOLDER AND UPLOADING THE ZIP FILE

Name	Type
 forms	File folder
 static	File folder
 templates	File folder
 app	Python Source File
 requirements	Adobe Acrobat Document

aws Search [Alt+S] Europe (Stockholm) Account ID: 5464-5374-6508 Dipangshu%20Kundu

Elastic Beanstalk > Create environment

### Application code [Info](#)

☐ Sample application

☐ Existing version  
Application versions that you have uploaded.

☒ Upload your code  
Upload a source bundle from your computer or copy one from Amazon S3.

### Version label

Unique name for this version of your application code.

flask-aws-deploy-version

Source code origin. Maximum size 500 MB

☒ Local file

Upload application

[Choose file](#)

☒ File name: flask-aws-deploy.zip  
File must be less than 500MB max file size

☐ Public S3 URL

## CREATING THE SPECIFIC ROLES REQUIRED

The screenshot shows the AWS IAM console 'Create role' page. The breadcrumb navigation is 'IAM > Roles > Create role'. The account ID is 5464-5374-6508 and the user is Dipangshu%20Kundu. The page is in Step 1: Select trusted entity. The left sidebar shows the steps: Step 1: Select trusted entity (selected), Step 2: Add permissions, Step 3: Name, review, and create. The main content area is titled 'Select trusted entity' with an 'Info' link. Under 'Trusted entity type', there are five options: 'AWS service' (selected), 'AWS account', 'Web identity', 'SAML 2.0 federation', and 'Custom trust policy'. Each option has a brief description. At the bottom, there is a 'Use case' section with the text 'Allow an AWS service like EC2, Lambda, or others to perform actions in this account.'

Step 1  
● Select trusted entity  
○ Step 2: Add permissions  
○ Step 3: Name, review, and create

### Select trusted entity [Info](#)

**Trusted entity type**

- ☒ **AWS service**  
Allow AWS services like EC2, Lambda, or others to perform actions in this account.
- ☐ **AWS account**  
Allow entities in other AWS accounts belonging to you or a 3rd party to perform actions in this account.
- ☐ **Web identity**  
Allows users federated by the specified external web identity provider to assume this role to perform actions in this account.
- ☐ **SAML 2.0 federation**  
Allow users federated with SAML 2.0 from a corporate directory to perform actions in this account.
- ☐ **Custom trust policy**  
Create a custom trust policy to enable others to perform actions in this account.

**Use case**  
Allow an AWS service like EC2, Lambda, or others to perform actions in this account.

The screenshot shows the AWS IAM console 'Create role' page, Step 2: Add permissions. The breadcrumb navigation is 'IAM > Roles > Create role'. The account ID is 5464-5374-6508 and the user is Dipangshu%20Kundu. The left sidebar shows the steps: Step 1: Select trusted entity, Step 2: Add permissions (selected), Step 3: Name, review, and create. The main content area is titled 'Add permissions' with an 'Info' link. Under 'Use case', there is a section 'Allow an AWS service like EC2, Lambda, or others to perform actions in this account.' Below this, there is a 'Service or use case' dropdown menu with 'Elastic Beanstalk' selected. Under 'Choose a use case for the specified service.', there are two options: 'Elastic Beanstalk - Compute' and 'Elastic Beanstalk - Environment' (selected). Each option has a brief description. At the bottom right, there are 'Cancel' and 'Next' buttons.

Step 1: Select trusted entity  
● Step 2: Add permissions  
○ Step 3: Name, review, and create

### Add permissions [Info](#)

**Use case**  
Allow an AWS service like EC2, Lambda, or others to perform actions in this account.

**Service or use case**  
Elastic Beanstalk

**Choose a use case for the specified service.**

**Use case**

- ☐ **Elastic Beanstalk - Compute**  
Allows your environment's EC2 instances to perform operations required for your application.
- ☒ **Elastic Beanstalk - Environment**  
Allows access to other AWS service resources that are required to create and manage environments.

[Cancel](#) [Next](#)

aws

Search

[Alt+S]

Global

Account ID: 5464-5374-6508

Dipangshu%20Kundu

IAM > Roles > Create role

Step 1

Step 2

Step 3

Add permissions

Name, review, and create

Role details

Role name

Enter a meaningful name to identify this role.

aws-elasticbeanstalk-service-role

Maximum 64 characters. Use alphanumeric and '+', '@', '-' characters.

Description

Add a short explanation for this role.

Allows access to other AWS service resources that are required to create and manage environments.

Maximum 1000 characters. Use letters (A-Z and a-z), numbers (0-9), tabs, new lines, or any of the following characters: '\_', '+', '@', '-', '[', ']', '#', '\$', '^', '()'; ''

Step 1: Select trusted entities

Edit

Trust policy

```
1 {
2   "Version": "2012-10-17",
3   "Statement": [
4     {
5       "Effect": "Allow",
6       "Principal": {
```

aws

Search

[Alt+S]

Global

Account ID: 5464-5374-6508

Dipangshu%20Kundu

IAM > Roles > Create role

Step 1

Step 2

Step 3

Add permissions

Name, review, and create

Permissions policy summary

Policy name	Type	Attached as
<a href="#">AWSElasticBeanstalkEnhancedHealth</a>	AWS managed	Permissions policy
<a href="#">AWSElasticBeanstalkManagedUpdatesCustomerRolePolicy</a>	AWS managed	Permissions policy

Step 3: Add tags

Add tags - optional

Tags are key-value pairs that you can add to AWS resources to help identify, organize, or search for resources.

No tags associated with the resource.

Add new tag

You can add up to 50 more tags.

Cancel

Previous

Create role

CloudShell

Feedback

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The screenshot shows the AWS IAM console 'Create role' page. The breadcrumb navigation is IAM > Roles > Create role. The page has two tabs: 'external web identity provider to assume this role to perform actions in this account.' and 'a corporate directory to perform actions in this account.' The 'Custom trust policy' option is selected. The 'Use case' section is expanded, showing 'Service or use case' as 'Elastic Beanstalk'. Under 'Choose a use case for the specified service', 'Elastic Beanstalk - Compute' is selected, with the description: 'Allows your environment's EC2 instances to perform operations required for your application.' The 'Next' button is visible at the bottom right.

The screenshot shows the 'Add permissions' step of the 'Create role' process. The left sidebar shows the progress: Step 1 (Select trusted entity), Step 2 (Add permissions), and Step 3 (Name, review, and create). The 'Permissions policies (3)' section lists three AWS managed policies: 'AWSElasticBeanstalkMulticontainerDocker', 'AWSElasticBeanstalkWebTier', and 'AWSElasticBeanstalkWorkerTier'. Below this, there is a link to 'Set permissions boundary - optional'. The 'Previous' and 'Next' buttons are at the bottom right.

The screenshot shows the 'Name, review, and create' step. The left sidebar shows the progress: Step 1 (Select trusted entity), Step 2 (Add permissions), and Step 3 (Name, review, and create). The 'Role details' section has a 'Role name' field with the value 'aws-elasticbeanstalk-ec2-role' and a 'Description' field with the text 'Allows your environment's EC2 instances to perform operations required for your application.' Below this, the 'Step 1: Select trusted entities' section is visible, showing a 'Trust policy' section with a preview of the policy document. The 'Edit' button is at the bottom right.



The screenshot shows the AWS IAM console interface for creating a new role. The breadcrumb navigation indicates the path: IAM > Roles > Create role. The page title is 'Step 2: Add permissions'. A table titled 'Permissions policy summary' lists three AWS managed policies: 'AWSElasticBeanstalkMulticontainerDocker', 'AWSElasticBeanstalkWebTier', and 'AWSElasticBeanstalkWorkerTier', all of type 'AWS managed' and attached as 'Permissions policy'. Below this, the 'Step 3: Add tags' section is visible, showing 'Add tags - optional' and a note that no tags are currently associated with the resource. The footer includes the AWS logo, a search bar, account ID (5464-5374-6508), and various utility links like CloudShell and Feedback.

Step 2: Add permissions

Permissions policy summary

Policy name	Type	Attached as
<a href="#">AWSElasticBeanstalkMulticontainerDocker</a>	AWS managed	Permissions policy
<a href="#">AWSElasticBeanstalkWebTier</a>	AWS managed	Permissions policy
<a href="#">AWSElasticBeanstalkWorkerTier</a>	AWS managed	Permissions policy

Step 3: Add tags

Add tags - optional [Info](#)

Tags are key-value pairs that you can add to AWS resources to help identify, organize, or search for resources.

No tags associated with the resource.

[Add new tag](#)

You can add up to 50 more tags.

The screenshot displays the AWS Elastic Beanstalk console for creating a new environment. The breadcrumb navigation shows: Elastic Beanstalk > Create environment. The page title is 'Configure service access'. A sidebar on the left lists six steps: 1. Configure environment, 2. Configure service access (current step), 3. Set up networking, database, and tags, 4. Configure instance traffic and scaling, 5. Configure updates, monitoring, and logging, and 6. Review. The main content area is titled 'Service access' and explains that IAM roles and EC2 instance profiles are required. It provides dropdown menus to select a 'Service role' (aws-elasticbeanstalk-service-role) and an 'EC2 instance profile' (aws-elasticbeanstalk-ec2-role), each with a 'Create role' button. An 'EC2 key pair' (static\_website) is also selected. The footer contains the AWS logo, search bar, account ID (5464-5374-6508), and utility links.

Step 2: Configure service access

Service access

IAM roles, assumed by Elastic Beanstalk as a service role, and EC2 instance profiles allow Elastic Beanstalk to create and manage your environment. Both the IAM role and instance profile must be attached to IAM managed policies that contain the required permissions. [Learn more](#)

Service role

Choose an IAM role for Elastic Beanstalk to assume as a service role. The IAM role must have the required IAM managed policies.

[aws-elasticbeanstalk-service-role](#) [Create role](#)

EC2 instance profile

Choose an IAM instance profile with managed policies that allow your EC2 instances to perform required operations.

[aws-elasticbeanstalk-ec2-role](#) [Create role](#)

EC2 key pair - optional

Select an EC2 key pair to securely log in to your EC2 instances. [Learn more](#)

[static\\_website](#)

aws [Search] [Alt+S] Europe (Stockholm) Account ID: 5464-5374-6508 Dipangshu%20Kundu

Elastic Beanstalk > Create environment

Step 1: Configure environment  
Step 2: Configure service access  
Step 3 - optional: **Set up networking, database, and tags**  
Step 4 - optional: Configure instance traffic and scaling  
Step 5 - optional: Configure updates, monitoring, and logging  
Step 6: Review

### Set up networking, database, and tags - optional

**Instance settings**  
Choose a subnet in each AZ for the instances that run your application. To avoid exposing your instances to the Internet, run your instances in private subnets and load balancer in public subnets. To run your load balancer and instances in the same public subnets, assign public IP addresses to the instances. [Learn more](#)

**VPC**  
Launch your environment in a custom VPC instead of the default VPC. You can create a VPC and subnets in the VPC management console. [Learn more](#)

[Create VPC](#)

**Public IP address**  
Assign a public IP address to the Amazon EC2 instances in your environment.  
☐ Enable

**Instance subnets**

Availability Zone	Subnet	CIDR	Name
-------------------	--------	------	------

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Elastic Beanstalk > Create environment

Availability Zone	Subnet	CIDR	Name
-------------------	--------	------	------

No instance subnets  
No instance subnets to display

**Database** [Info](#)  
Integrate an RDS SQL database with your environment. [Learn more](#)

☒ Enable database

**Tags**  
Apply up to 50 tags. You can use tags to group and filter your resources. A tag is a key-value pair. The key must be unique within the resource and is case-sensitive. [Learn more](#)

Cancel [Skip to review](#) [Previous](#) [Next](#)

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## SUBMITTING THE REVIEW

This screenshot shows the 'Configure instance traffic and scaling' step in the AWS Elastic Beanstalk console. The left sidebar lists the steps: Step 1 (Configure environment), Step 2 (Configure service access), Step 3 (Set up networking, database, and tags), Step 4 (Configure instance traffic and scaling - selected), Step 5 (Configure updates, monitoring, and logging), and Step 6 (Review). The main content area is titled 'Configure instance traffic and scaling - optional' and includes an 'Instances' section with an 'Info' link. Below this, the 'Root volume (boot device)' section allows configuration of the root volume type (set to 'Container default'), size (100 GB), IOPS (100), and throughput (125 MiB/s). The 'Amazon CloudWatch monitoring' section shows a 'Monitoring interval' of 5 minutes. The bottom of the console shows the 'CloudShell' icon, a 'Feedback' link, and copyright information for Amazon Web Services, Inc. (© 2025).

aws [Search] [Alt+S] Europe (Stockholm) Account ID: 5464-5374-6508 Dipangshu%20Kundu

Elastic Beanstalk > Create environment

Step 1  
● Configure environment

Step 2  
● Configure service access

Step 3 - optional  
● Set up networking, database, and tags

Step 4 - optional  
● **Configure instance traffic and scaling**

Step 5 - optional  
● Configure updates, monitoring, and logging

Step 6  
● Review

### Configure instance traffic and scaling - optional [Info](#)

▼ **Instances** [Info](#)  
Configure the Amazon EC2 instances that run your application.

**Root volume (boot device)**

**Root volume type**  
The type of storage for the root volume attached to each instance.  
(Container default) ▼

**Size**  
The number of gigabytes of the root volume attached to each instance.  
100 GB

**IOPS**  
Input/output operations per second for a provisioned IOPS (SSD) volume.  
100 IOPS

**Throughput**  
The desired throughput for the Amazon EBS root volume attached to your environment's EC2 instance.  
125 MiB/s

**Amazon CloudWatch monitoring**  
The time interval between when metrics are reported from the EC2 instances

**Monitoring interval**  
5 minute ▼

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This screenshot shows the 'Instance types' and 'AMI ID' section of the AWS Elastic Beanstalk console. The left sidebar is the same as the previous screenshot. The main content area shows a note about the architecture using x86 processors. Below this, the 'Instance types' section allows selection of instance types (t3.micro and t3.small) with up/down arrows and a 'Remove' button. An 'Add instance type' button is also present. The 'AMI ID' section shows the default Amazon Machine Image (AMI) ID: ami-02c2d9dfee3267324. The bottom of the console shows 'Cancel', 'Skip to review', 'Previous', and 'Next' buttons. The footer includes the 'CloudShell' icon, 'Feedback' link, and copyright information for Amazon Web Services, Inc. (© 2025).

aws [Search] [Alt+S] Europe (Stockholm) Account ID: 5464-5374-6508 Dipangshu%20Kundu

Elastic Beanstalk > Create environment

This architecture uses x86 processors and is compatible with most third-party tools and libraries.

☐ **arm64**  
This architecture uses AWS Graviton processors. You might have to recompile some third-party tools and libraries.

**Instance types**  
Add instance types for your environment with your preferred launch order. The order preference only applies to On-Demand Instances and Spot Instances that use the capacity optimized prioritized allocation strategy. We recommend you include at least two instance types. [Learn more](#)

1. t3.micro ▲ ▼

2. t3.small ▲ ▼ Remove

Add instance type

**AMI ID**  
Elastic Beanstalk selects a default Amazon Machine Image (AMI) for your environment based on the Region, platform version, and processor architecture that you choose. [Learn more](#)

ami-02c2d9dfee3267324

Cancel Skip to review Previous Next

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Search

[Alt+S]

Europe (Stockholm)

Account ID: 5464-5374-6508

Dipangshu%20Kundu

Elastic Beanstalk

Create environment

Step 1  
Configure environment

Step 2  
Configure service access

Step 3 - optional  
Set up networking, database, and tags

Step 4 - optional  
Configure instance traffic and scaling

Step 5 - optional  
Configure updates, monitoring, and logging

Step 6  
Review

Configure updates, monitoring, and logging - optional

Info

Monitoring

Info

Health reporting

Enhanced health reporting provides free real-time application and operating system monitoring of the instances and other resources in your environment. The EnvironmentHealth custom metric is provided free with enhanced health reporting. Additional charges apply for each custom metric. For more information, see [Amazon CloudWatch Pricing](#)

System

☐ Basic

☒ Enhanced

CloudWatch Custom Metrics - Instance

Choose metrics

CloudWatch Custom Metrics - Environment

Choose metrics

Health event streaming to CloudWatch Logs

CloudShell

Feedback

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aws

Search

[Alt+S]

Europe (Stockholm)

Account ID: 5464-5374-6508

Dipangshu%20Kundu

Elastic Beanstalk

Create environment

Instance log streaming to CloudWatch logs

Configure the instances in your environment to stream logs to CloudWatch logs. You can set the retention to up to 10 years and configure Elastic Beanstalk to delete the logs when you terminate your environment. [Learn more](#)

Log streaming

standard CloudWatch charges apply.

☐ Enable

Environment properties

Use environment properties as either plain text environment variables or as references to secret ARN values that are stored in AWS Secrets Manager or AWS Systems Manager (SSM) Parameter Store. When using secrets, update your Elastic Beanstalk EC2 instance profile role with permissions to your secrets and parameters. [Learn more](#)

Source

Plain text

Name

PYTHONPATH

Value

/var/app/venv/staging-LQM

Remove

Add environment property

Cancel

Previous

Next

CloudShell

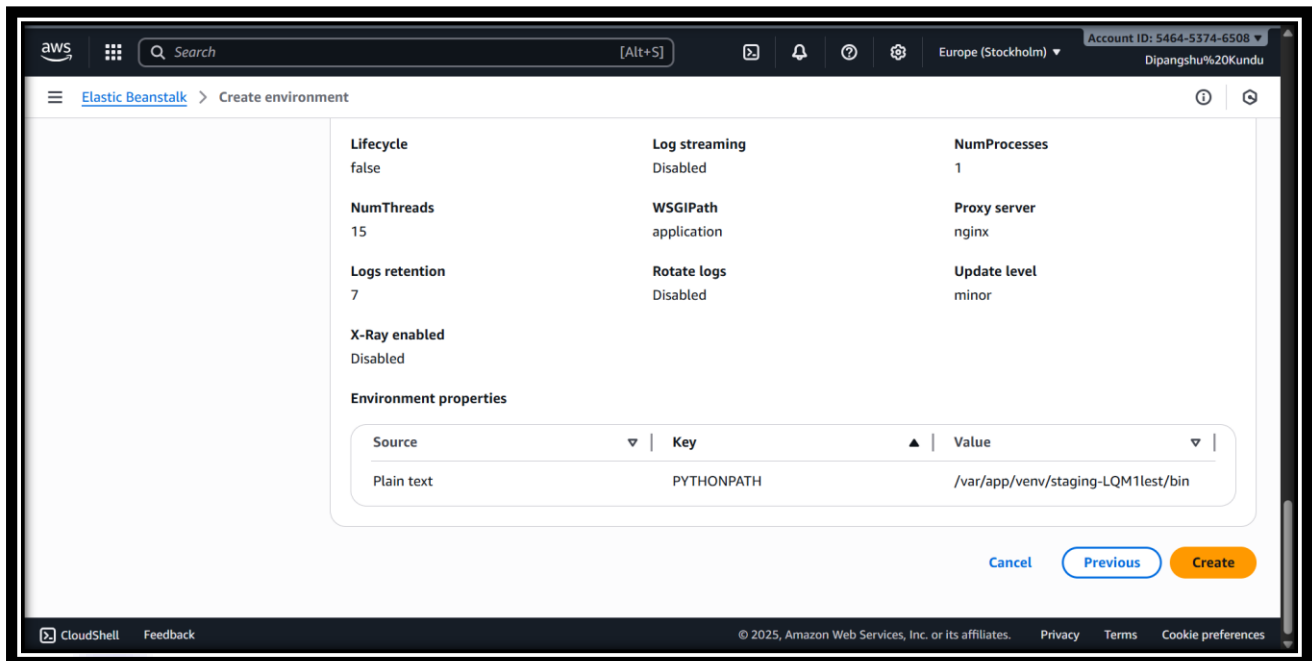
Feedback

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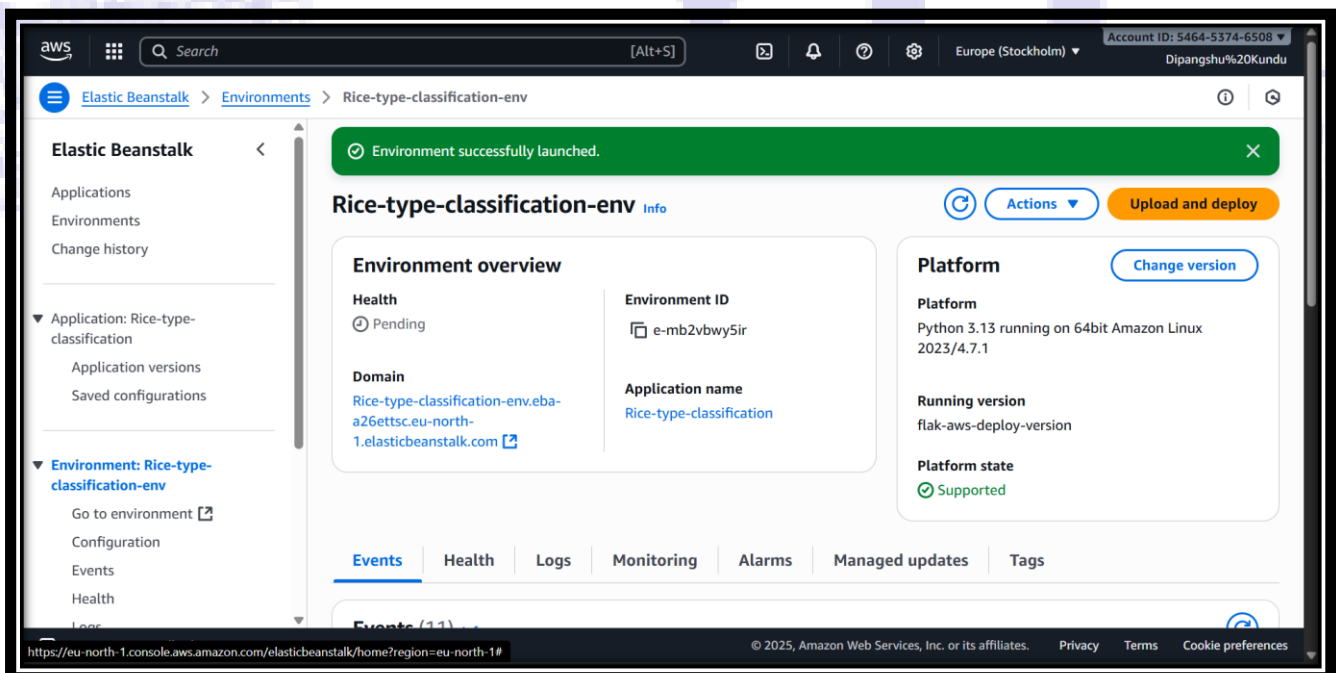
Privacy

Terms

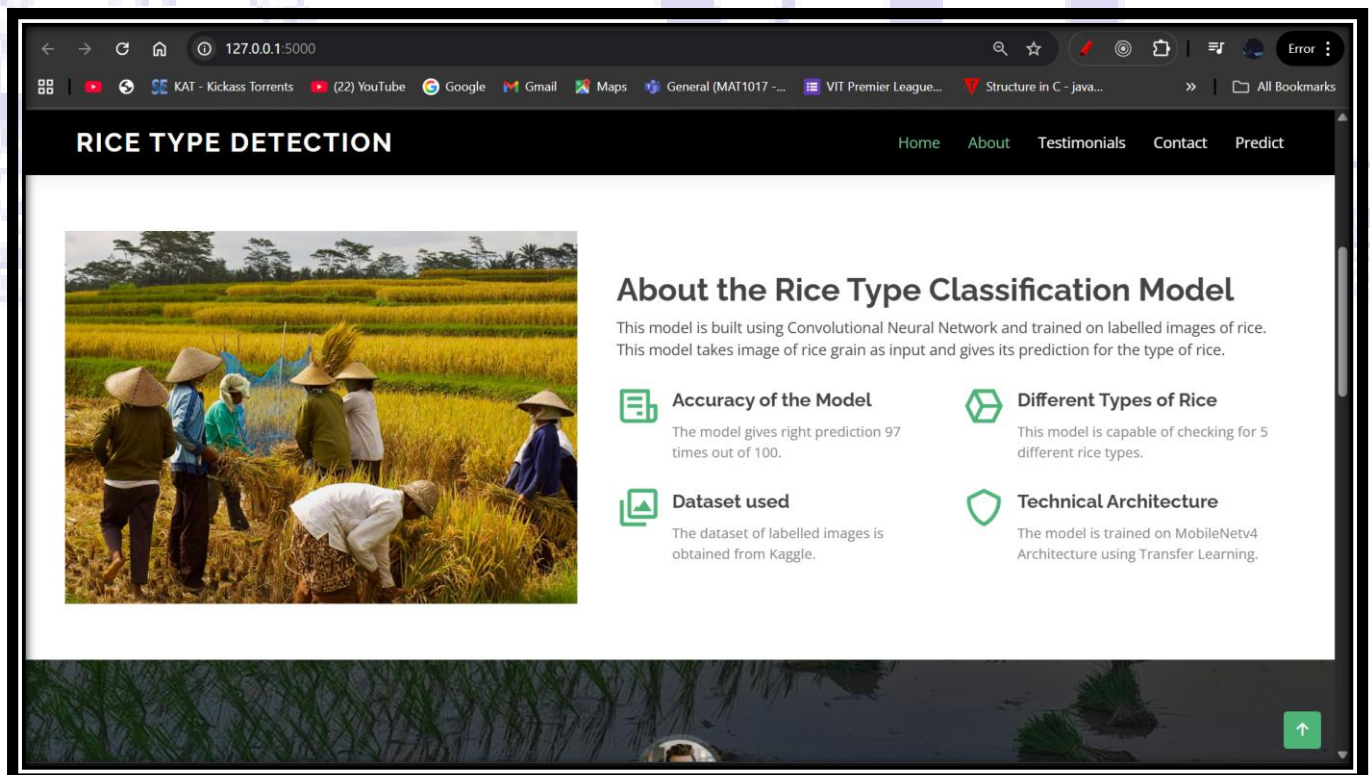
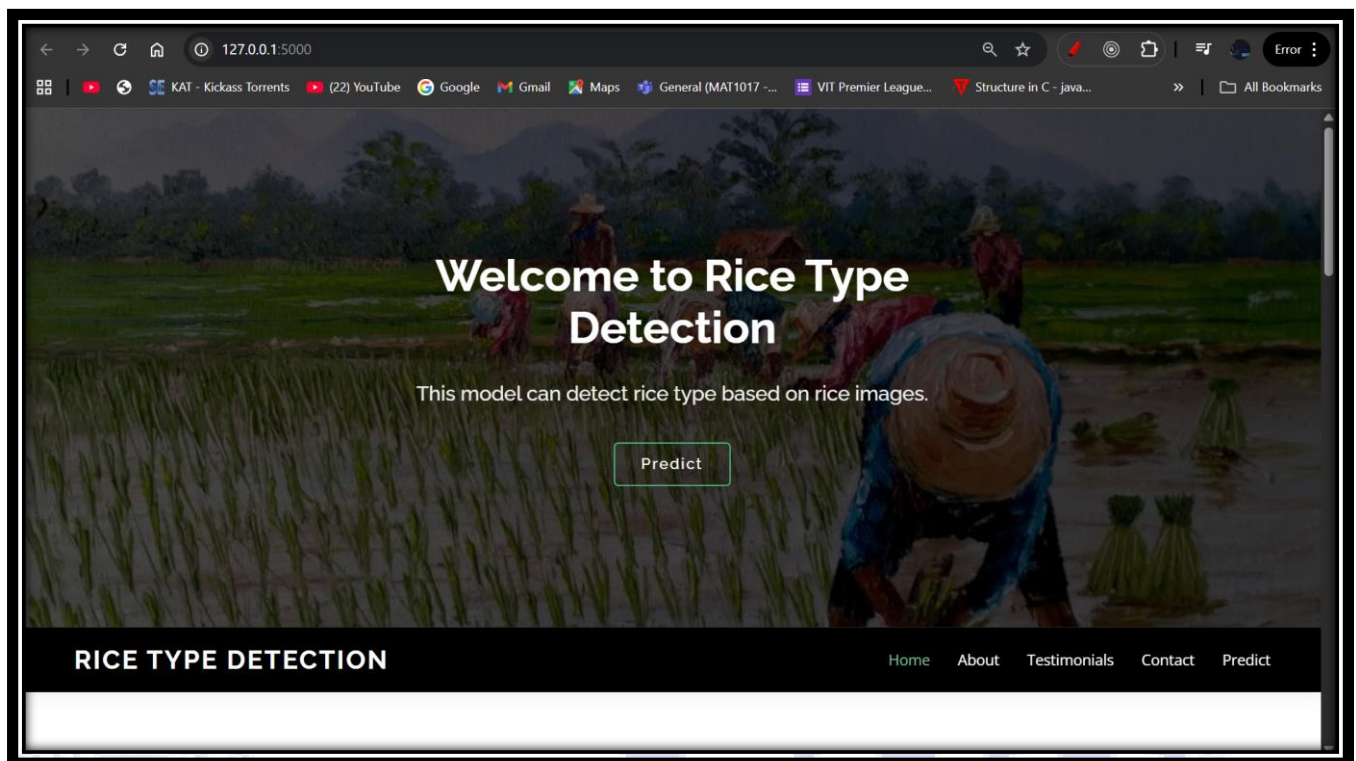
Cookie preferences



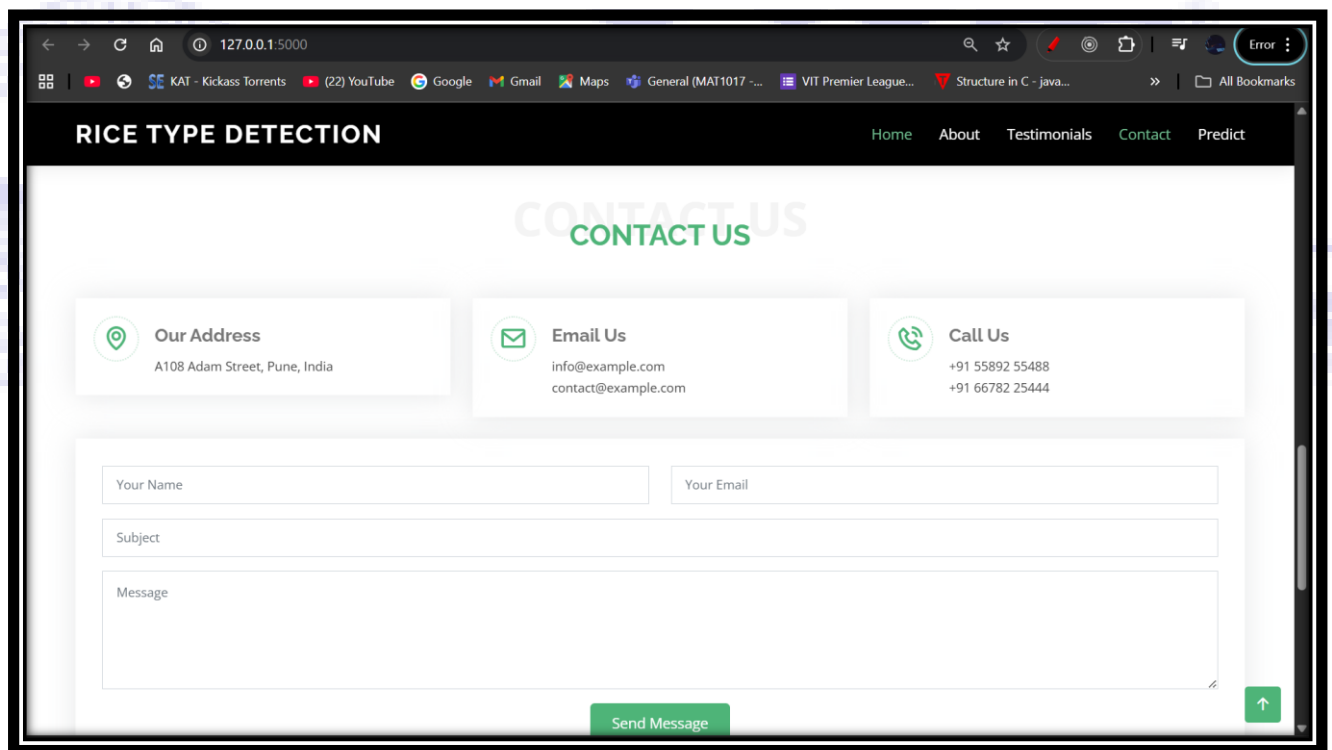
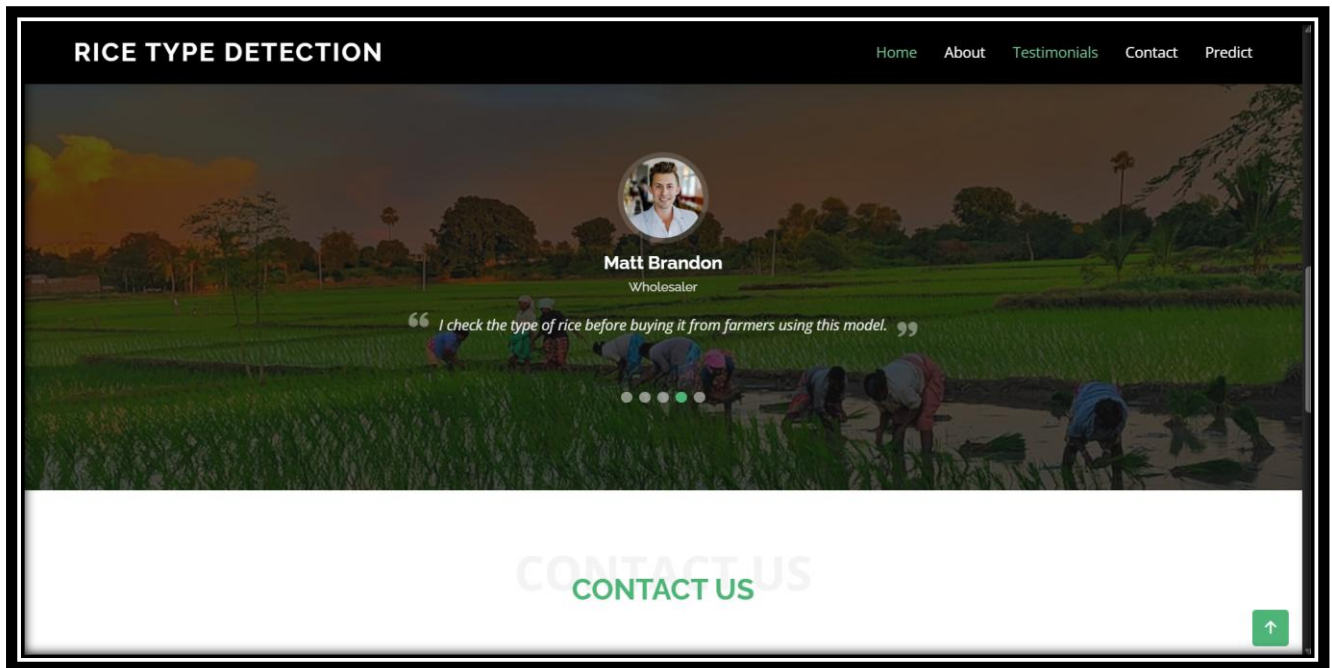
## ENVIRONMENT SUCCESSFULLY LAUNCHED

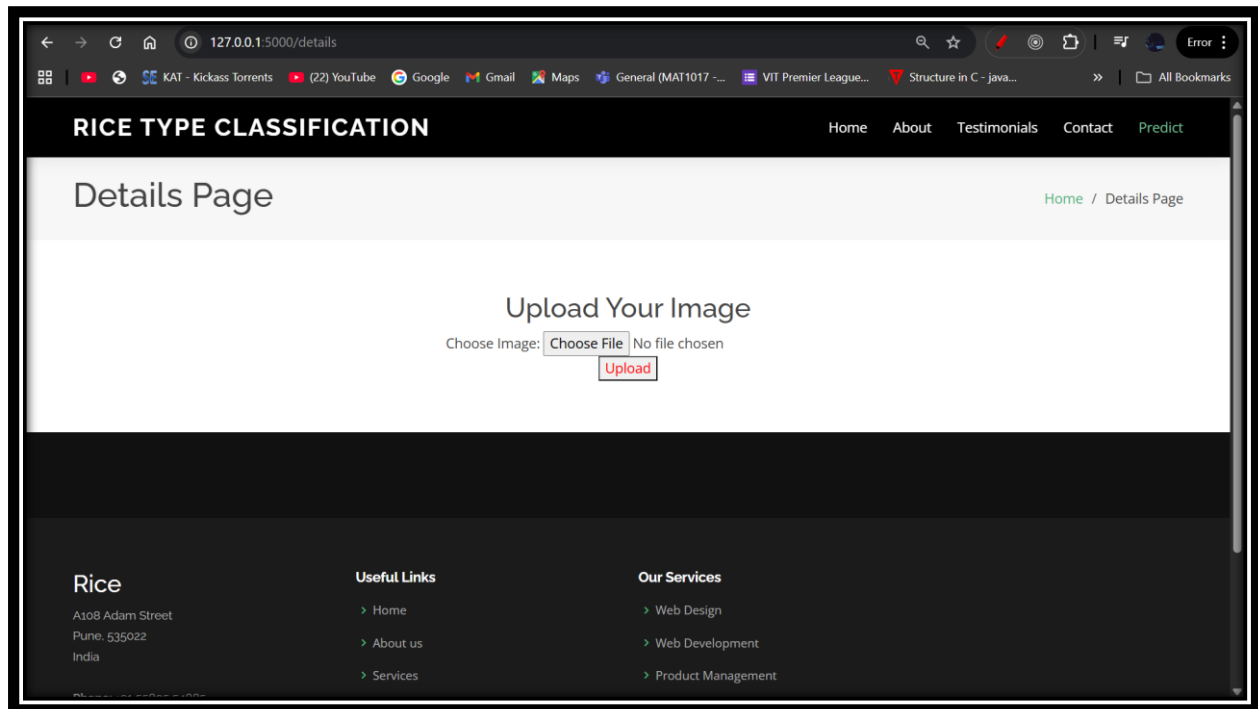


## OUTPUT SCREENSHOTS:





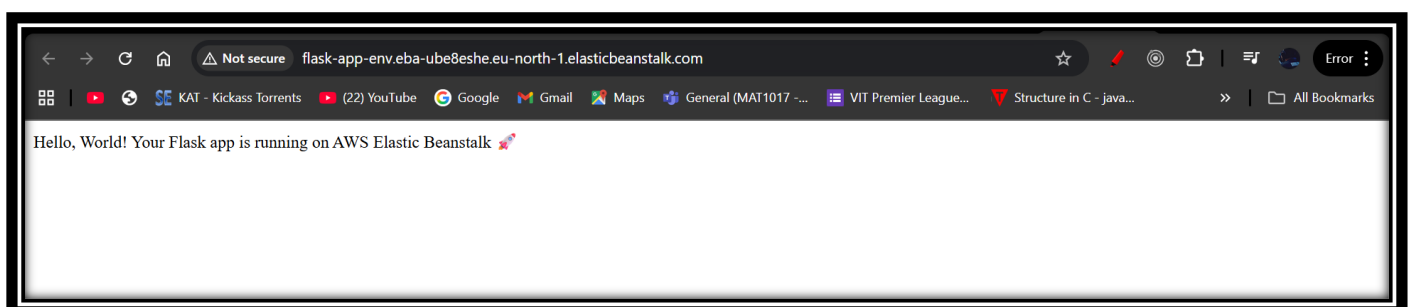




**WEBSITE LINK FROM AWS ELASTIC BEANSTALK (THIS LINK WILL NOT WORK AFTER A CERTAIN TIME DUE TO ITS FREE TIER NATURE)**

[Click Here To Be Redirected](#)

Below is the output, on clicking the above link we will be redirected:







# VIT<sup>®</sup>

## Vellore Institute of Technology

(Deemed to be University under section 3 of UGC Act, 1956)