Instruction for Deploying Flask Application with OpenCV and Dlib on AWS EC2

Overview

This document provides step-by-step instructions for deploying a Flask web application that uses OpenCV and dlib for facial landmark detection. The goal is to run the application on an AWS EC2 instance and make it accessible via a web browser.

Prerequisites

AWS account

SSH key pair for accessing the EC2 instance

Basic knowledge of using the terminal/command prompt

The following files ready for deployment:

application.py

requirements.txt

index.html

shape\_predictor\_68\_face\_landmarks.dat

Step-by-Step Guide

Launch an EC2 Instance:

Go to the AWS Management Console.

Navigate to the EC2 Dashboard and click "Launch Instance".

Select the Amazon Linux 2 AMI.

Choose an instance type (e.g., t2.micro for testing).

Configure instance details, add storage, and configure security group:

Add rules to allow HTTP (port 80) and SSH (port 22) traffic.

Launch the instance and download the key pair (.pem file).

Connect to the EC2 Instance:

Open a terminal or command prompt.

Connect using SSH:

bash

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ssh -i path/to/your-key.pem ec2-user@your-ec2-public-dns

Set Up the Environment:

Update the package list and install necessary packages:

bash

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sudo yum update -y

sudo yum install git python3 python3-devel -y

sudo yum groupinstall "Development Tools" -y

sudo yum install cmake -y

sudo yum install -y mesa-libGL mesa-libGL-devel

Install and Configure Python Virtual Environment:

Install virtualenv:

bash

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sudo pip3 install virtualenv

Create and activate a virtual environment:

bash

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virtualenv venv

source venv/bin/activate

Transfer Application Files:

Use SCP (or a similar method) to transfer your application files (application.py, requirements.txt, index.html, shape\_predictor\_68\_face\_landmarks.dat) to the EC2 instance.

Place the files in a directory, e.g., /home/ec2-user/flask\_app.

Install Dependencies:

Navigate to your application directory:

bash

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cd /home/ec2-user/flask\_app

Install dependencies:

bash

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pip install -r requirements.txt

Run the Flask Application:

Start your Flask application:

bash

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python application.py

Access the Application:

Open a web browser and navigate to http://your-ec2-public-dns:5000.

Issues and Workarounds

If you encounter issues with missing libraries (e.g., libGL.so.1), ensure all dependencies are correctly installed as per the setup steps.

If the application is not accessible, double-check your security group settings to ensure the necessary ports are open.

For SSL setup, a static IP (Elastic IP) and a domain name are recommended for consistent access and security.

Conclusion

This guide outlines the necessary steps to deploy a Flask application using OpenCV and dlib on AWS EC2. By following these instructions, you should be able to successfully run and access your application via a web browser.