A

SYNOPSIS

of

MINOR PROJECT

on

Web-Deployed Facial Recognition System

Submitted by

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Project Guide
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Problem Statement:

In today's digital age, security and efficient identification processes are paramount. Traditional methods such as passwords and ID cards are prone to theft, loss, and forgery. There is a growing need for robust, reliable, and user-friendly identification systems that can be seamlessly integrated into various applications. Facial recognition technology offers a promising solution by providing a non-intrusive, accurate, and quick means of identity verification. However, deploying an efficient facial recognition system on the web poses challenges related to performance, security, and scalability.

Brief Description:

The "Web Deployed Facial Recognition System" project aims to develop a web-based application that leverages facial recognition technology for secure and efficient identification. The system will capture and process facial images to authenticate users, providing a streamlined and secure method of access control for various applications such as online banking, e-commerce, and secure login systems.

Objective and Scope:

Objective:

- To design and implement a web-based facial recognition system that is accurate, fast, and secure.
- To enhance the security of online services by integrating facial recognition technology.
- To create a scalable solution that can handle a large number of users and transactions.

Scope:

- Development of a facial recognition module that can be integrated into web applications.
- Creation of a user-friendly interface for capturing and verifying facial images.
- Implementation of security measures to protect user data and prevent unauthorized access.
- Testing and validation of the system in various scenarios to ensure reliability and accuracy.

Methodology:

 Requirement Analysis: Gather and analyze requirements from stakeholders to define the system specifications.

 Design: Create a system architecture that includes the facial recognition module, database, and user interface.

 Development: Implement the facial recognition algorithm, develop the web application, and integrate the components.

 Testing: Conduct extensive testing to ensure the system's accuracy, performance, and security.

 Deployment: Deploy the system on a web server and monitor its performance.

 Maintenance: Regularly update the system to improve functionality and security based on user feedback and new technological advancements.

Hardware and Software Requirements:

Hardware:

- Standard computer with internet access
- Web server for deployment
- Camera for capturing facial images

Software:

- Operating System: Windows/Linux/MacOS
- Programming Languages: Python, JavaScript
- Libraries: OpenCV, Dlib, TensorFlow/Keras
- Web Technologies: HTML, CSS, Flask/Django (for backend), React.js/Angular.js (for frontend)
- Database: MySQL/PostgreSQL
- Development Tools: VS Code, PyCharm, Git

Technologies:

 Facial Recognition Algorithms: Convolutional Neural Networks (CNNs), Histogram of Oriented Gradients (HOG), Deep Learning

 Web Development: HTML, CSS, JavaScript, React.js, Flask/Django

 Database Management: SQL, ORM

 Cloud Services: AWS/GCP/Azure for hosting and scalability

Testing Techniques:

 Unit Testing: Test individual components and functions of the system.

- **Integration Testing:** Ensure different modules work together seamlessly.
- **System Testing:** Test the entire system for overall functionality.
- **Performance Testing:** Evaluate the system's performance under different conditions.
- **User Acceptance Testing (UAT):** Collect feedback from end-users to ensure the system meets their needs.

Project Contribution:

This project will contribute to the field of digital security by providing a robust and scalable facial recognition system that can be easily deployed over the web. It will enhance user experience by offering a secure and convenient method for identity verification and access control. Additionally, this project will serve as a valuable learning experience in the domains of machine learning, web development, and cybersecurity.