Forgery Check

AI-Powered Image and Video Forgery Detection

Ensuring Authenticity in Digital Media

Review - 2

Introduction

Forgery Check is an advanced tool designed to detect forgeries in images and videos using AI and machine learning. In a digital era where media manipulation is common, ensuring authenticity is crucial. Forgery Check provides a reliable solution for identifying manipulated media, covering a wide range of forgery types such as splicing, copy-move forgeries, and deep fakes. With its user-friendly interface, users can easily upload files, perform analyses, and receive detailed reports on media authenticity. This tool is essential for media verification, legal investigations, and content creation, emphasizing the importance of trust and integrity in digital communications.

Project Scope

- **Objective:**

  Deliver a robust solution for detecting digital forgeries in images and videos using AI. Ensure accurate and reliable analysis to maintain media integrity.

- **Scope:**

  Analyze image and video files to detect splicing, copy-move forgeries, and deep fakes. Support diverse file formats for broad applicability across industries.

Features

1. Image Forgery Detection utilizes techniques like ELA, Noise Analysis, Copy-Move Detection along with Machine Learning Prediction

2. Video Forgery Detection utilizes frame-by-frame analysis and AI to detect inconsistencies and deep fakes, ensuring video content integrity

3. Forgery Check provides a user-friendly interface for easy media uploads and forgery analysis, with responsive design for all devices

Technology Stack

1

Frontend

Utilizes HTML, CSS, and Bootstrap for responsive design.

2

Backend

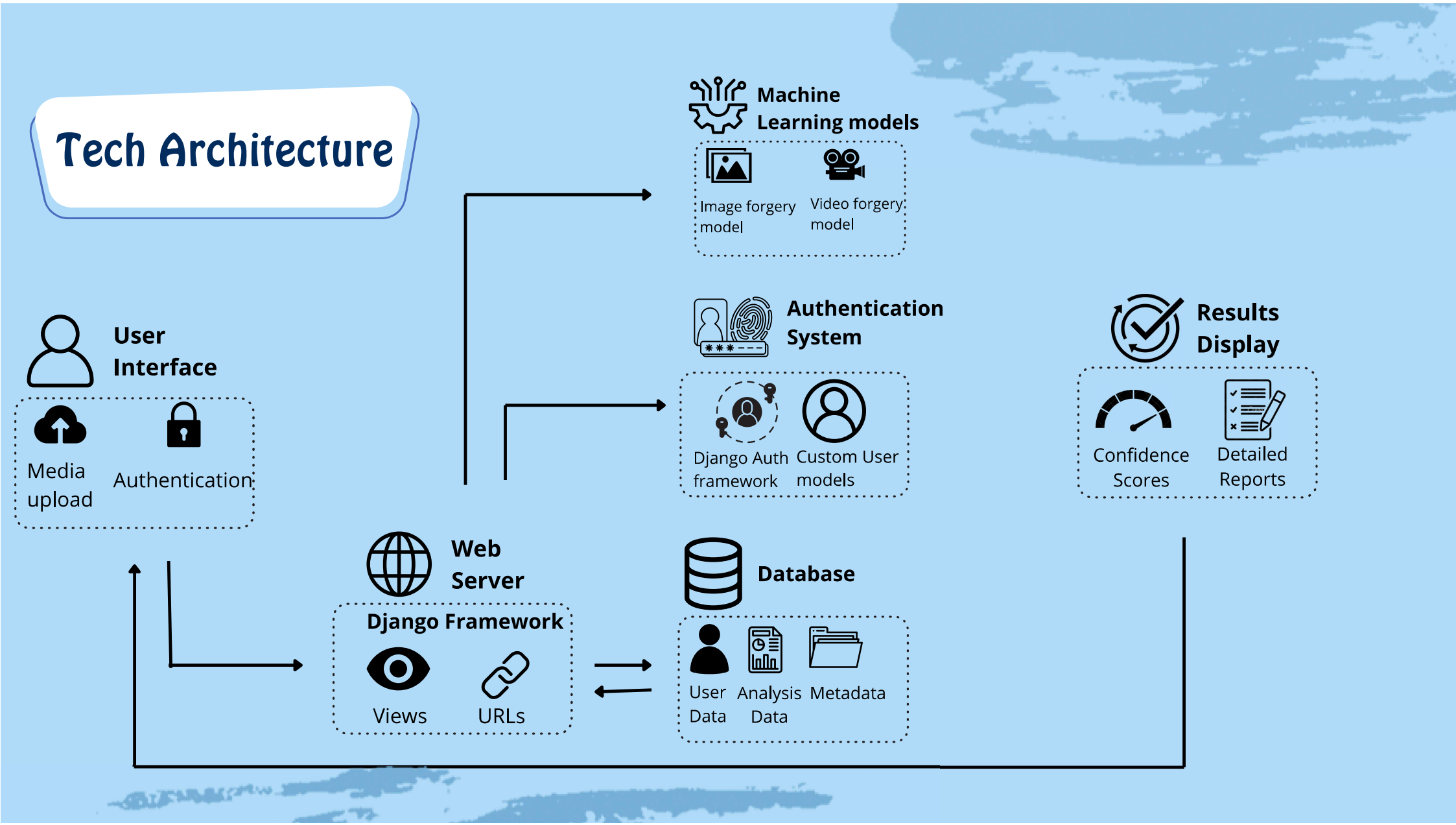
Built with Django, a high-level Python web framework.

3

Machine Learning

Utilizes models trained on diverse datasets to enable accurate forgery detection.

Tech Architecture



Business Architecture

User Login

Users access the platform via login or registration

Media Upload

Users upload images or videos for forgery analysis.

Processing

System processes the media using machine learning models

View Results

Users view analysis results, including confidence scores

How it works

Users can explore how the system works, read FAQs, and contact support

User feedback

Users can submit feedback about their experience with the analysis results

Performance Metrics

- Forgery Check effectively detects whether media is forged or authentic, providing users with **confidence scores** that quantify the reliability of the analysis. The system achieves high accuracy rates across various types of forgeries, ensuring users can trust the results. Performance benchmarks indicate robust detection capabilities, even with complex manipulations.

Results

The platform presents analysis results in a user-friendly format, showcasing confidence scores alongside visual indicators. Users can easily interpret whether their media is authentic or forged, with detailed metadata providing additional context. This comprehensive visualization aids in understanding the integrity of digital content

Web Application Home Screen

Challenges & Solutions

- **Handling large media files efficiently**
  ~ Implemented optimized algorithms for faster processing.
- **Ensuring high accuracy in forgery detection**
  ~ Utilized diverse datasets for model training and validation.
- **User interface accessibility across diverse devices**
  ~ Developed responsive design for consistent user experience
- **Maintaining user data security**
  ~ Adopted robust encryption and privacy measures.

Future Work

- Support additional media formats for broader applicability.
- Enhancement: Improve real-time analysis capabilities.
- Explore advanced AI techniques for enhanced detection.
- Continuously refine the system based on user insights.

Conclusion

Forgery Check is a tool designed to ensure the authenticity of digital media through advanced AI-driven analysis. By addressing challenges such as file handling and accuracy, the project has established a reliable platform for forgery detection. Future work aims to expand capabilities and integrate new technologies, enhancing the system's effectiveness and reach. As digital manipulation becomes more sophisticated, ForgeryCheck remains committed to providing users with trustworthy analysis and maintaining the integrity of digital communications.

Thank You