IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 7, April 2025
Impact Factor: 7.67

A Transformer-Based Web Framework for Real-Time Deepfake Detection using Hugging Face and Supabase

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Abstract: *The increasing prevalence of deepfake media presents serious challenges to the credibility and security of digital content. This paper introduces a real-time deepfake detection platform built as a web application, powered by transformer-based models hosted on Hugging Face. The frontend is developed using React and Vite, styled with Tailwind CSS, and enhanced with ShadCN components to ensure a seamless and responsive user experience. Supabase is employed on the backend to manage user authentication and facilitate temporary storage for uploaded visual content. Users can submit images or short video clips, which are pre-processed and analyzed by the transformer model to assess authenticity with high accuracy. Experimental results show strong performance across key metrics such as precision and recall, while maintaining low inference latency suitable for real-time use. By combining cutting-edge deep learning with modern web technologies, the system offers an accessible and scalable solution for detecting manipulated media.*

Keywords: Deepfake Detection, Transformer Models, Real-Time Inference, Web Application, Hugging Face, Supabase, Visual Media Verification

DOI: 10.48175/568