EduVidGuard: An AI Video Validator for Education Platforms

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Abstract

This paper presents EduVidGuard, an innovative AI-based solution for validating the authenticity and educational relevance of video content on e-learning platforms. With the increasing prevalence of user-generated content, ensuring quality and topic alignment has become a significant challenge. EduVidGuard integrates advanced AI technologies that analyze both audio and visual aspects of videos to determine if they meet educational, accuracy, and contextual standards. It employs OpenAI Whisper for transcription and Tesseract OCR for visual code extraction, enabling an intelligent content review pipeline. This paper explores the architecture, functionality, evaluation, and potential implications of EduVidGuard in enhancing digital education integrity.

Keywords: EduVidGuard, OpenAI Whisper, Tesseract OCR, AI in education, video moderation, content validation

1. Introduction

With the rise of online learning platforms, a massive influx of user-generated videos has emerged, many of which lack sufficient educational value or relevance. Manual moderation cannot scale to meet this volume. EduVidGuard is proposed as an AI-driven tool that validates video content to ensure educational relevance, technical accuracy, and synchronization. By automating the validation process, this system can enhance user experience and trust in e-learning ecosystems.

2. System Architecture

EduVidGuard comprises three core modules: (1) Audio Analysis using OpenAI Whisper,
(2) Visual Content Analysis using Tesseract OCR, and (3) Decision Engine. The audio stream is transcribed with Whisper and analyzed for keywords, sentiment, and topic coherence. Simultaneously, the video is scanned for code snippets, diagrams, or visual aids that support the spoken content. These components are then evaluated for alignment with declared subject matter.

3. Methodology

The audio pipeline involves Whisper's speech-to-text model which ensures high-accuracy transcription. Transcripts undergo topic modeling using NLP techniques such as Latent Dirichlet Allocation (LDA) to determine subject relevance. The visual pipeline applies Tesseract OCR frame-by-frame to detect code snippets, which are then syntax-checked. A hybrid rule-based and ML-based decision engine evaluates whether the visual and auditory data are consistent and educationally relevant.

4. Evaluation

Initial testing was conducted on a dataset of 100 educational videos from various platforms. EduVidGuard achieved a 91% accuracy in identifying off-topic or low-quality videos and significantly reduced human moderation effort. Qualitative feedback indicated higher platform trust among end users when EduVidGuard was implemented.

5. Applications

EduVidGuard can be integrated into MOOCs, online learning platforms, and institutional content management systems to pre-screen uploaded videos. It is particularly valuable in programming tutorials, where visual code alignment with verbal explanations is critical.
Additionally, it can serve in content audit workflows for certification and compliance checks.

6. Conclusion

EduVidGuard presents a scalable and effective solution for ensuring video content quality in educational platforms. Through audio-visual validation using AI, it supports platforms in maintaining educational integrity while minimizing manual workload. Future developments may include real-time validation, broader subject coverage, and multilingual support.