

The Review on AI Powered Plagiarism and AI Text Detector

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Abstract: *This research describes and implements an AI-augmented full-stack web application to identify plagiarism and AI-written content, and it solves an outstanding challenge in maintaining academic integrity. Due to increasing access to digital materials and popular adoption of advanced language models, it is common for traditional plagiarism checkers to fail to identify subtle similarities or to distinguish human created and AI-written text. To overcome these challenges, this solution embraces a dual-engine approach. For plagiarism detection, it employs Term Frequency-Inverse Document Frequency (TF-IDF) coupled with Cosine Similarity to identify textual and semantic similarities among a range of documents. On detecting AI-written content, the system employs Bidirectional Encoder Representations from Transformers (BERT), capable of detecting intricate linguistic attributes and stylistic signals distinguishing AI-written and actual human created contents.*

Apart from detection functionality, the system embeds sophisticated tools with an intention to help users improve originality and quality of their written documents. A Generative AI-powered suggestion tool provides contextual awareness with real-time recommendations to enhance clarity, coherence, and writing style as a whole. Moreover, a modern "Humanizer" tool with Large Language Model (LLM) technology helps to convert overly mechanical and repetitive writings to natural and human-like language and hence makes outputs readable and original. The system is defined by an intuitive interface allowing documents to upload seamlessly as well as perform interactive visualization and color-coded analysis reports clearly highlighting overlaps and AI-generated segments. The system is developed using Python and Django based upon a module architecture and thus promises scalability and flexibility with efficient performance. Overall, the project offers an all-encompassing and reliable solution set to identify issues and help users improve their writings in a pedagogically relevant way.

Keywords: Plagiarism Detection, AI Text Detection, Natural Language Processing, Machine Learning, BERT, TF-IDF, T5, Web Application

