GIDLMM: Generated Images Detection Using Large Multimodal Model

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***Abstract*— The rapid advancement of Generative AI (GenAI) has produced highly realistic images, making it difficult to distinguish authentic content from synthetic fabrications and accelerating the spread of visual misinformation. Effectively identifying AI-generated content with transparent methods has become a critical challenge. This study proposes the Generated Images Detection Using Large Multimodal Model (GIDLMM), a dual-module framework for data-efficient and interpretable detection. The first module, an AI-generated image detector, builds upon a CLIP model fine-tuned with Low-Rank Adaptation (LoRA) for parameter efficiency. To train this module, we introduce a novel data generation process where a Large Multimodal Model (LMM) automatically creates rich semantic descriptions for a small dataset. For this process, we propose an efficient "AI Judges" mechanism, where multiple virtual judges score candidate descriptions in a single pass to ensure quality without the high computational cost of repeated queries. Trained on only 1,000 samples, our model significantly outperforms state-of-the-art methods that use 100k samples, achieving an improvement on commercial generator datasets. The second module provides generation trace interpretations; after an image is flagged as AI-generated, it produces a textual explanation identifying visual artifacts that informed the decision. This explainability helps users recognize suspicious regions, enhances trust, and improves the model's transparency and reliability.**

***Keyword*—CLIP, LMM, AI-generated Image Detection, Low-Resource Data, LoRA**

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