AI-Generated Image Classification and Model Identification

Proposal by Team 1
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Introduction:
In the era of advanced artificial intelligence, the ability to discern between human-generated and AI-generated images has become crucial. This project aims to develop a robust image classification model capable of distinguishing between images created by humans and those generated by AI. Additionally, the system will be extended to identify the specific AI model responsible for generating the image, including state-of-the-art models like DALL-E, Imagen, and others.

Objectives:
Create a binary classification model to distinguish between human-generated and AI-generated images.
Implement a secondary classification layer to identify the specific AI model used in generating images, with a focus on models like DALL-E, Imagen, and other state-of-the-art image generation models.
Develop a user-friendly interface for easy interaction with the model.

Technical Approach:
Dataset Collection: Gather a diverse dataset comprising both human-created and AI-generated images. This dataset will include images generated by popular AI models, with a specific focus on DALL-E, Imagen, and others.
Binary Classification Model: Train a Convolutional Neural Network (CNN) for the binary classification task. Optimize the model using techniques like data augmentation and transfer learning. We will be using Pytorch as our primary framework for the project.
Secondary Classification Model: Develop a secondary model, possibly a Siamese network, to identify the AI model, with a specific focus on models like DALL-E, Imagen, and others. This model will determine the model responsible for generating the images.
Prompt Generation Integration: Explore the use of prompt generation models to enhance the training process and model interpretability, with a focus on prompts related to DALL-E, Imagen, and other specific models.

Evaluation:
Binary Classification: Evaluate the model's performance using metrics like accuracy, precision, recall, and F1 score.
Model Identification: Assess the secondary model's accuracy in identifying the specific AI model used in image generation, including DALL-E, Imagen, and others.

Timeline:
Weeks 1-2: Dataset collection and preprocessing.
Weeks 2-3: Binary classification model training and optimization, and secondary classification model development
Weeks 3-4: User interface design and integration, testing and debugging, final evaluation and documentation.