Projects' List 2024

Title	Project Description	Approach	data
Painter classification	Classifying two images of paintings, as belonging to the same artist or not. Note that, artist in the test set should be different from the artists in the training set.	CNN, Siamese Network	https://www.kaggle.com/c/painter-by-numbers
Image color resolution enhancement	Generate gray scale image from its quantized version (use specific data sets such as flowers, food, etc)	Convolutional Autoencoder (UNET)	https://www.robots.ox.ac.uk/~vgg/data/flowers/102/ https://data.vision.ee.ethz.ch/cvl/datasets_extra/food-101/
Image coloring	Generate color image from gray-scale version (use specific data sets such as flowers, etc)	Convolutional Autoencoder (UNET)	https://www.robots.ox.ac.uk/~vgg/data/flowers/102/ https://data.vision.ee.ethz.ch/cvl/datasets_extra/food-101/
Learning from small data using semi-supervised learning	Semi-supervised learning, by removing a large percentage of the labels.	Autoencoder	https://www.microsoft.com/en-us/download/details.aspx?id=54765
Generating clothing or food images	Given a dataset of clothing (food), generate new, fake images of clothing (food). The input will also include the desired label. Use the learned metrics to evaluate the generated images.	Wasserstein GAN (other generative models are possible)	https://www.kaggle.com/agrigorev/clothing-dataset-full https://data.vision.ee.ethz.ch/cvl/datasets_extra/food-101/
Weather Prediction	Predict London's weather based on the historical data.	Reccurent Neural Network (any type)	https://www.kaggle.com/datasets/emmanuelfwerr/london-weather-data
Sentiment Classification in Tweets	Analyzing Sentiments in User-Generated Tweets.	Compare LSTM with fine-tuning BERT	https://www.kaggle.com/datasets/tusharpaul2001/brand-sentiment-analysis-dataset

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Hate Speech Detection	Analyze text to classify it into non-hateful or hateful	Compare LSTM with fine-tuning BERT	https://www.kaggle.com/datasets/waalbannyantudre/hate-speech-detection-curated-dataset
Title generation	Generate course title from course skills using large language models.	GPT Fine Tuning	https://www.kaggle.com/datasets/azraimohamad/coursera-course-data
Song lyrics generation by genre	Create a model that generates lyrics conditioned by genre: Pop and Rap.	LSTM or GPT Fine Tuning	https://www.kaggle.com/datasets/sshikamaru/music-genre-classification https://www.kaggle.com/datasets/nikhilnayak123/5-million-song-lyrics-dataset