

Projects

1. Feature Embeddings

1. Extract the GAN based embedding of the MNIST data (after training GAN (code provided) with MNIST) for every digit and provide t-sne visualisation.
2. Extract the Autoencoder based embedding of the MNIST data (after training autoencoder (code provided) with MNIST) for every digit and provide t-sne visualisation.
3. Compare the t-sne visualisations of these feature embeddings.

2. Leaf Instance Segmentation

Implement traditional segmentation based algorithm section 6.1 in the link https://vios.science/assets/pdfs/Scharr_MVAP2015.pdf

3. Leaf Instance Segmentation

Implement traditional segmentation based algorithm section 6.2 in the link https://vios.science/assets/pdfs/Scharr_MVAP2015.pdf

4. Leaf Instance Segmentation

Implement traditional segmentation based algorithm section 6.4 in the link https://vios.science/assets/pdfs/Scharr_MVAP2015.pdf

5. Music Genre Classification

Build a model that can classify the genre of music using neural networks. To extract information from the audio samples such as spectrograms, MFCC, etc. (code provided), experiment with KNN and Naive Bayes.

6. Heart Disease Prediction

Kaggle dataset:

<https://www.kaggle.com/datasets/rishidamarla/heart-disease-prediction>

Based on the logistic regression, build a model for heart disease prediction.

7. Object counting

Based on watershed segmentation, segment and count objects in the image.

8. Face Detection

Face detection using simple Dlib and opencv. Deploy as GUI.

Kaggle Competitions, attempt with colab:

<https://www.kaggle.com/c/titanic>

<https://www.kaggle.com/c/house-prices-advanced-regression-techniques>

<https://www.kaggle.com/c/digit-recognizer>

<https://www.kaggle.com/c/porto-seguro-safe-driver-prediction>

<https://www.kaggle.com/c/nyc-taxi-trip-duration>

<https://www.kaggle.com/c/bike-sharing-demand>

<https://www.kaggle.com/c/santander-customer-transaction-prediction>

<https://www.kaggle.com/c/ieee-fraud-detection>

<https://www.kaggle.com/c/plant-seedlings-classification>