TEKLRN

TENSORFLOW LEVEL 27

1. Intro to Autoencoders
2. Import TensorFlow and other libraries
3. Load the dataset
4. First example: Basic autoencoder
5. Second example: Image denoising
   - Define a convolutional autoencoder
6. Third example: Anomaly detection
   - Overview
7. Load ECG data
8. Normalize the data to [0,1].
9. Plot an anomalous ECG.
10. Build the model
11. Detect anomalies
12. Choose a threshold value that is one standard deviations above the mean.
13. Classify an ECG as an anomaly if the reconstruction error is greater than the threshold.
14. Convolutional Variational Autoencoder
    - Setup
    - Load the MNIST dataset
15. Use *tf.data* to batch and shuffle the data
    - Define the encoder and decoder networks with *tf.keras.Sequential*
    - Encoder network
    - Decoder network
16. Reparameterization trick
17. Network architecture
18. Define the loss function and the optimizer

19. Training
    - Generating images
    - Display a generated image from the last training epoch
    - Display an animated GIF of all the saved images
    - Display a 2D manifold of digits from the latent space