



Variational Autoencoders GUI

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Download Datasets



Go one level up from the project directory and create the directory **DATASETS**.

Then, download all the datasets from the URLs in the file **datasets_urls.md**, extract them and move them to the **DATASETS** folder.

How to Run the GUI



We are using Python 3.

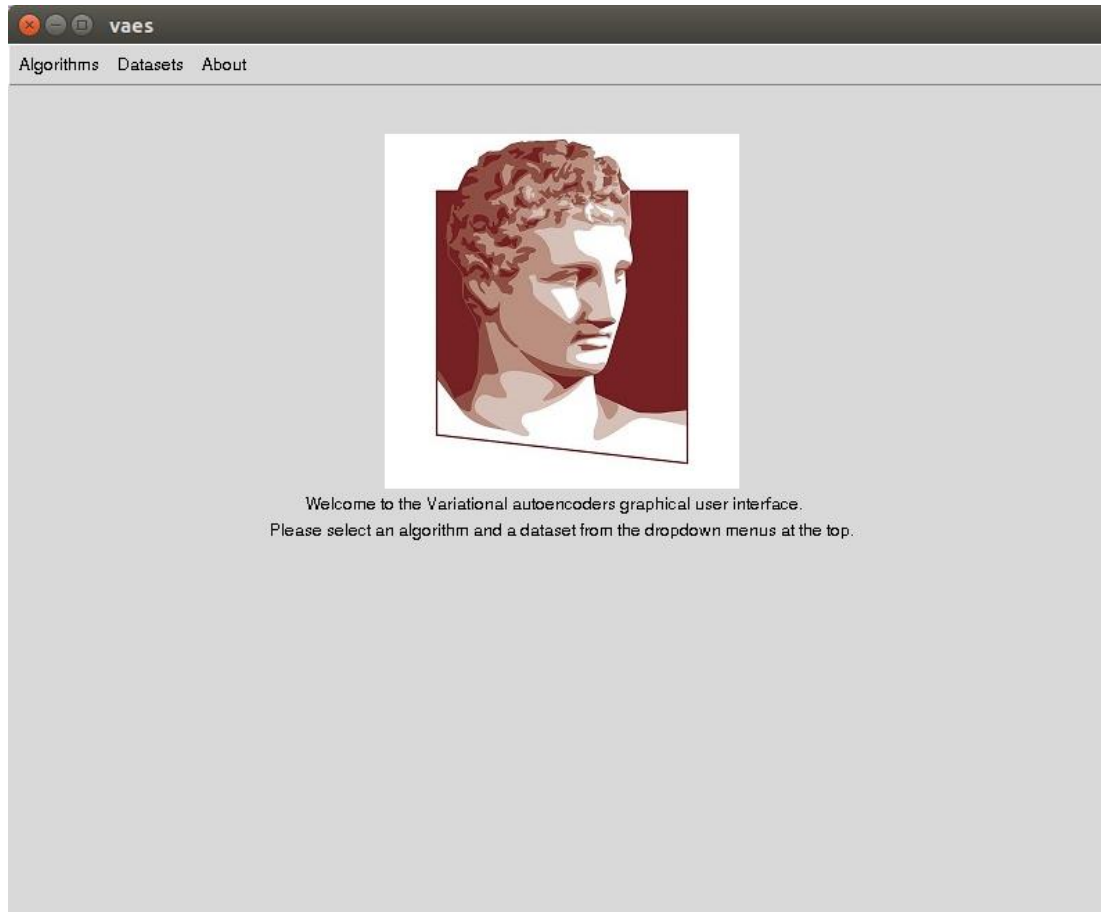
First, go to the project directory of the thesis and install the Python dependency libraries, by typing:

pip install -r dependencies.txt

To run the GUI from the terminal, type:

python vaes_gui.py

GUI Welcome page.



GUI Algorithms and Datasets dropdown menus.



VAE in TensorFlow

VAE in PyTorch

VAE in Keras

VAE Missing Values in TensorFlow

VAE Missing Values in PyTorch

K-NN Missing Values

GUI Algorithms dropdown menu.

MNIST

Binarized MNIST

CIFAR-10

OMNIGLOT

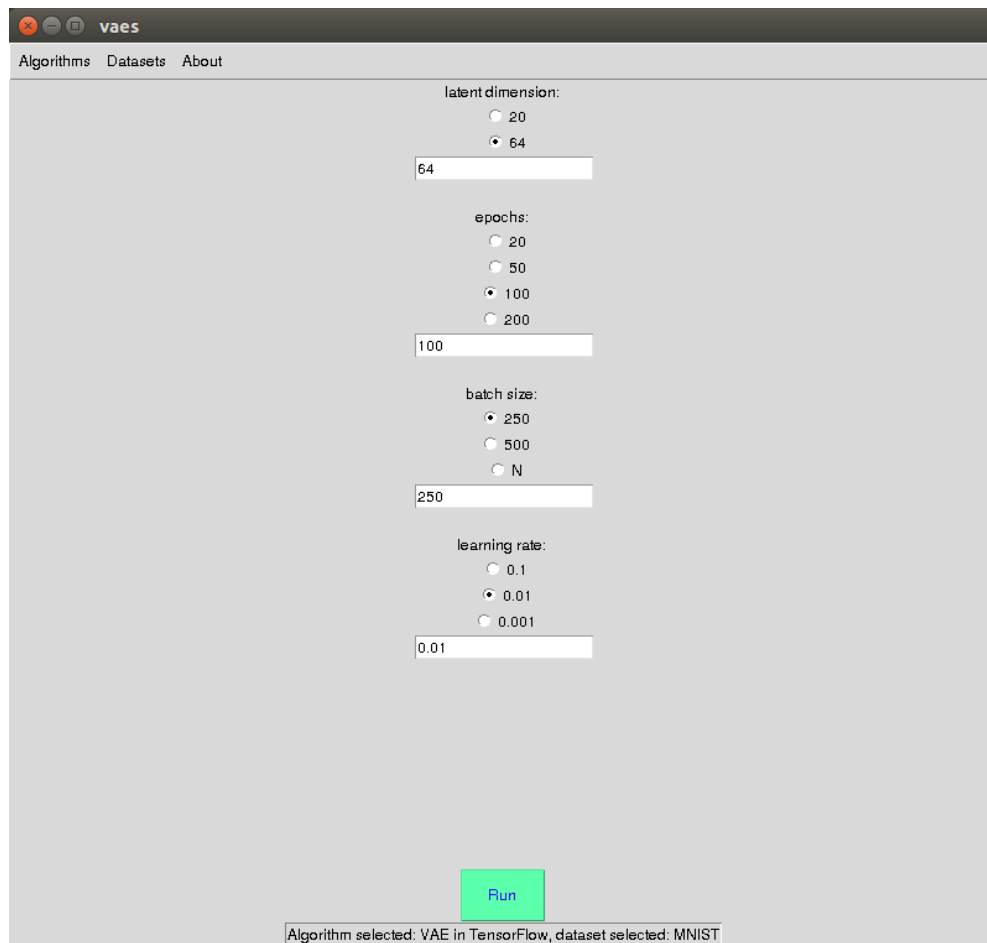
YALE Faces

The Database of Faces

MovieLens

GUI Datasets dropdown menu.

GUI VAE in TensorFlow, MNIST dataset.




The image shows a graphical user interface (GUI) for training a Variational Autoencoder (VAE) in TensorFlow on the MNIST dataset. The window is titled "vae" and has a menu bar with "Algorithms", "Datasets", and "About".

The main configuration area includes the following settings:

- latent dimension:** Radio buttons for 20, 64 (selected), and a text input field containing 64.
- epochs:** Radio buttons for 20, 50, 100 (selected), and 200, with a text input field containing 100.
- batch size:** Radio buttons for 250 (selected), 500, and N, with a text input field containing 250.
- learning rate:** Radio buttons for 0.1, 0.01 (selected), and 0.001, with a text input field containing 0.01.

A green "Run" button is located at the bottom center. At the bottom of the window, a status bar displays: "Algorithm selected: VAE in TensorFlow, dataset selected: MNIST".

GUI VAE in TensorFlow, CIFAR-10 dataset.



vae

Algorithms Datasets About

latent dimension:

☐ 20

☒ 64

64

epochs:

☐ 20

☐ 50

☒ 100

☐ 200

100

batch size:

☒ 250

☐ 500

☐ N

250

learning rate:

☐ 0.1

☒ 0.01

☐ 0.001

0.01

grayscale or RGB:

☒ grayscale

☐ RGB

Run

Algorithm selected: VAE in TensorFlow, dataset selected: CIFAR-10

GUI VAE in TensorFlow, OMNIGLOT dataset.



vaes

Algorithms Datasets About

latent dimension:

☐ 20

☒ 64

64

epochs:

☐ 20

☐ 50

☒ 100

☐ 200

100

batch size:

☒ 250

☐ 500

☐ N

250

learning rate:

☐ 0.1

☒ 0.01

☐ 0.001

0.01

language:


☒ English

☐ Greek

Run

Algorithm selected: VAE in TensorFlow, dataset selected: OMNIGLOT

GUI K-NN Recommendation System, MNIST dataset.



vaes

Algorithms Datasets About

K:

☐ 1

☐ 3

☒ 10

☐ 100

construct missing values:

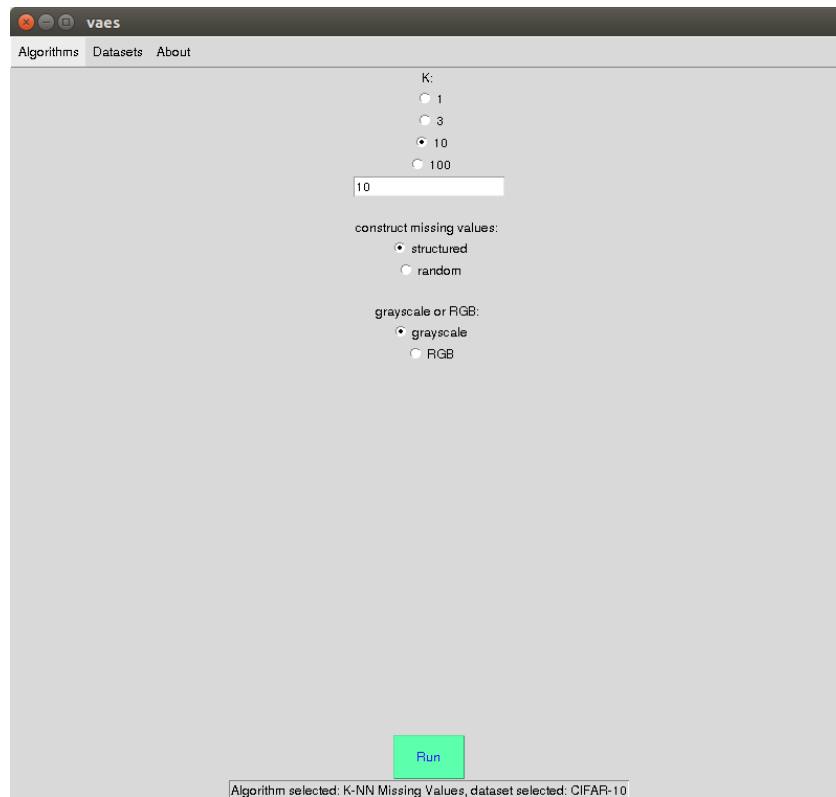
☒ structured

☐ random

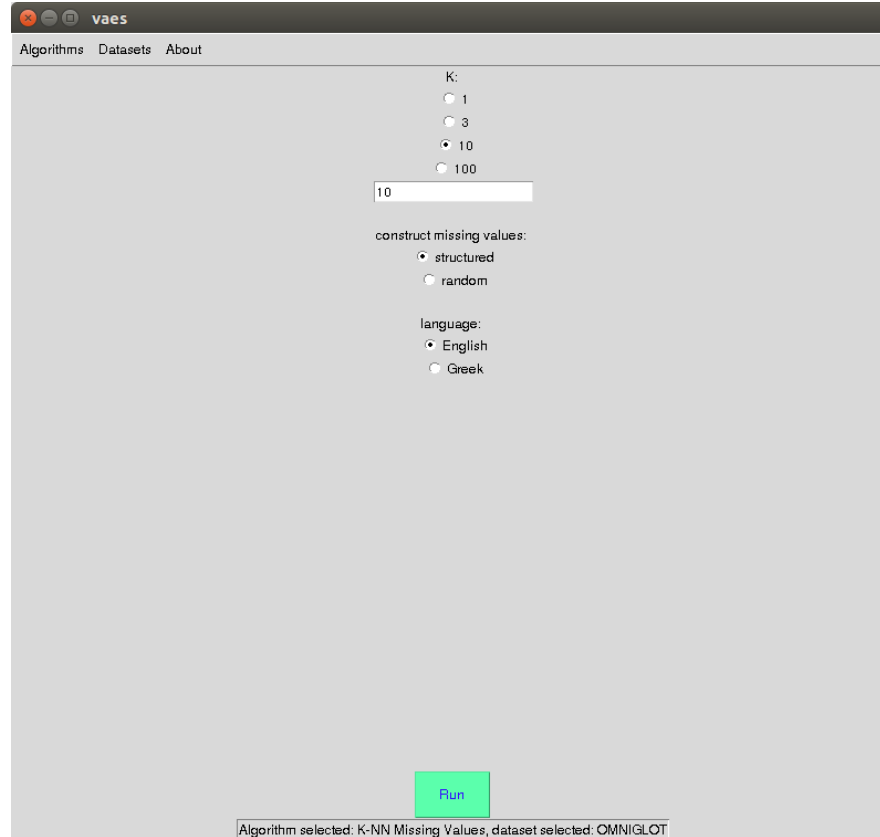
Run

Algorithm selected: K-NN Missing Values, dataset selected: MNIST

GUI K-NN Recommendation System, CIFAR-10 dataset.



GUI K-NN Recommendation System, OMNIGLOT dataset.



vaes

Algorithms Datasets About

K:

☐ 1

☐ 3

☒ 10

☐ 100

10

construct missing values:

☒ structured

☐ random

language:

☒ English

☐ Greek

Run

Algorithm selected: K-NN Missing Values, dataset selected: OMNIGLOT

GUI datasets details.



Datasets Details	
MNIST dataset	
# TRAIN data: 55000, # TEST data: 10000	
# VALIDATION data: 5000 # Classes: 10	
Dimensions: 28x28 pixels	
MNIST dataset link	
Fashion MNIST dataset	
# TRAIN data: 60000, # TEST data: 10000	
# Classes: 10, Dimensions: 28x28 pixels	
Fashion MNIST dataset link	
Binarized MNIST dataset	
# TRAIN data: 50000, # TEST data: 10000	
# VALIDATION data: 10000, # Classes: 10	
Dimensions: 28x28 pixels	
Binarized MNIST dataset link	
CIFAR-10 dataset	
# TRAIN data: 50000, # TEST data: 10000	
# Classes: 10	
RGB Dimensions: 32x32x3 pixels	
Grayscale Dimensions: 32x32x1 pixels	
CIFAR-10 dataset link	
OMNIGLOT dataset	
English Alphabet	
# TRAIN data: 390, # TEST data: 130, # Classes: 26	
Greek Alphabet	
# TRAIN data: 360, # TEST data: 120, # Classes: 24	
Dimensions: 28x28 pixels	
OMNIGLOT dataset link	
YALE Faces dataset	
# of data: 2442, # Classes: 38	
Dimensions: 168x192 pixels	
YALE Faces dataset link	
ORL Face Database	
# of data: 400, # Classes: 40	
Dimensions: 92x112 pixels	
ORL Face Database link	
MovieLens 100k dataset	
# TRAIN ratings: 90570, # TEST ratings: 9430	
# of users: 943, # of movies: 1682	
# of total ratings: 1586126, non-missing percentage: 5.7 %	
MovieLens dataset link	
Download all datasets here	

GUI About.

