## Variational Autoencoders & Missing Values Completion Algorithms

by Christos Kormaris

A graphical user interface (GUI) has been implemented for the project of this thesis, using Python and the **Tkinter** library.

First, browse to the directory "vaes\_gui" of the thesis project and install the required Python dependencies, by typing:

```
pip install -r dependencies.txt
```

Listing 1: command for installing Python dependencies

To run the GUI from the terminal, type:

```
python vaes_gui.py
```

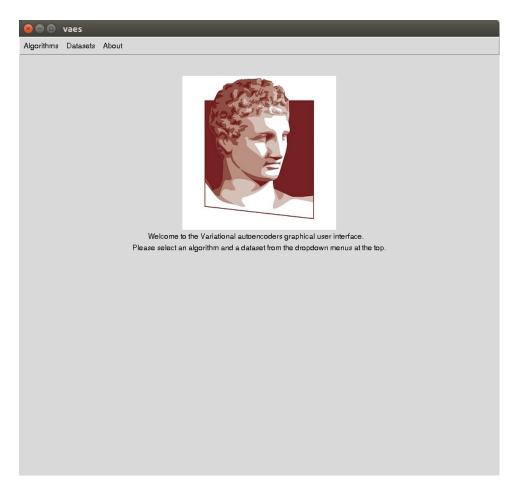
Listing 2: command for running the GUI

To create an executable file for the GUI (".exe"), which you can run anytime from a Windows environment, type:

```
pip install pyinstaller
pyinstaller vaes_gui.spec
```

Listing 3: command for creating an executable file for the GUI

Then, download all the datasets from the URL in the file "datasets\_urls.txt" and move them to the newly created "dist" folder. Inside, there should be a folder with the name "vaes\_gui", which contains the executable file "vaes\_gui.exe".



 $\label{eq:figure 1: GUI Welcome page.}$  Figure 1: GUI Welcome page.

VAE in TensorFlow
VAE in PyTorch
VAE in Keras

VAE Missing Values in TensorFlow
VAE Missing Values in PyTorch
K-NN Missing Values

MNIST
Binarized MNIST
CIFAR-10
OMNIGLOT
YALE Faces
The Database of Faces
MovieLens

(a) GUI Algorithms dropdown menu.

 $\ensuremath{^{(b)}}$  GUI Datasets dropdown menu.

Figure 2: Dropdown menus.

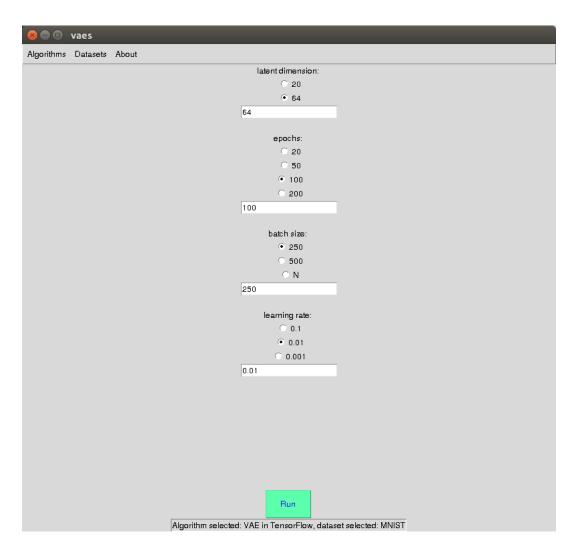


Figure 3: GUI VAE in TensorFlow, MNIST dataset.

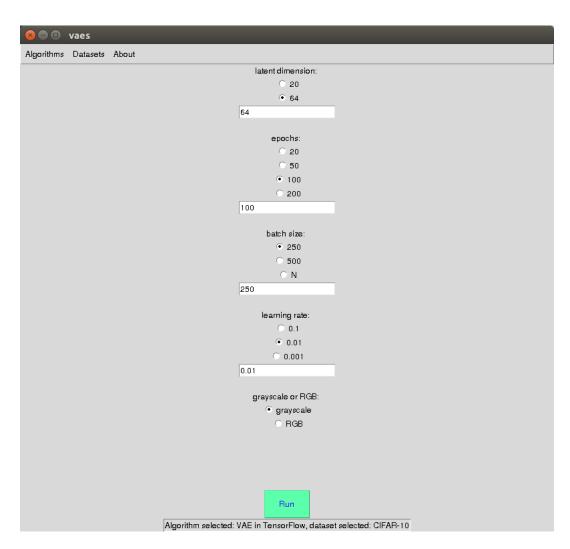


Figure 4: GUI VAE in TensorFlow, CIFAR-10 dataset.

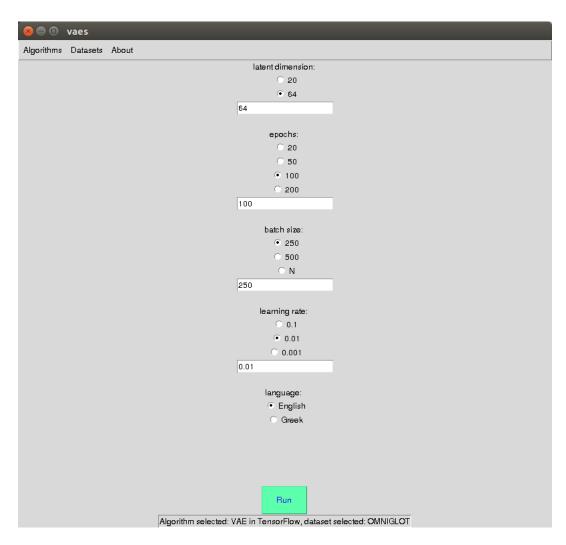


Figure 5: GUI VAE in TensorFlow, OMNIGLOT dataset.

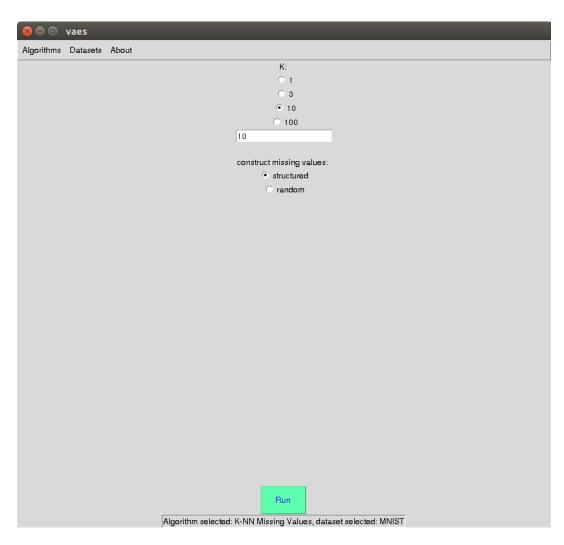


Figure 6: GUI K-NN Missing Values algorithm, MNIST dataset.

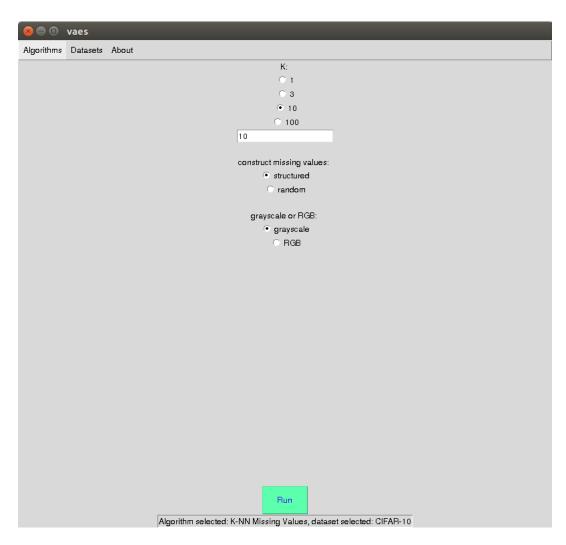
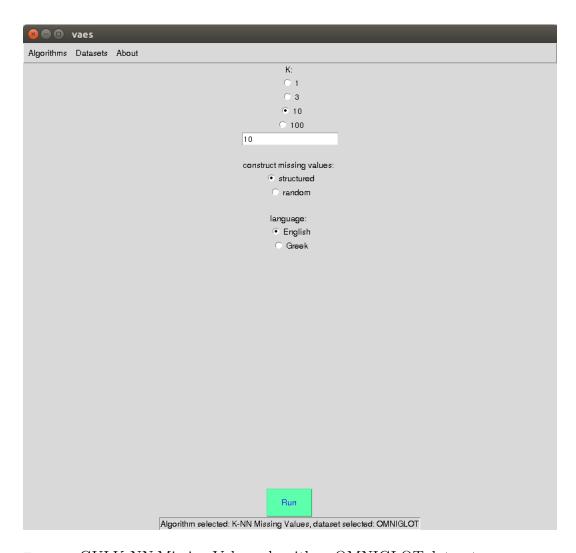


Figure 7: GUI K-NN Missing Values algorithm, CIFAR-10 dataset.



 ${\bf Figure~8:~GUI~K-NN~Missing~Values~algorithm,~OMNIGLOT~dataset.}$ 

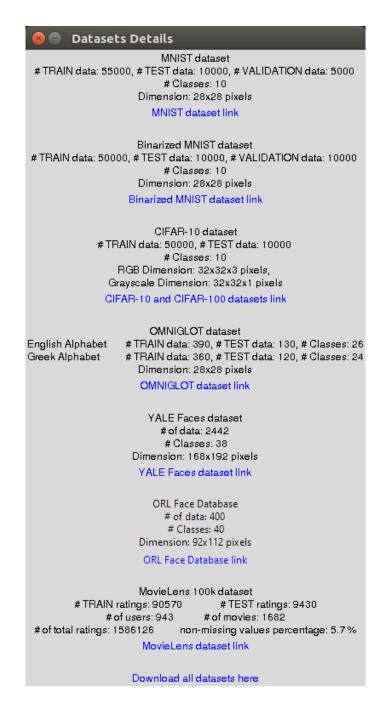
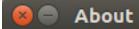


Figure 9: GUI datasets details.



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Figure 10: GUI About.