

Variational Autoencoders & Missing Values Completion Algorithms GUI

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

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.

Now, go to the project directory. First, browse to the project directory of the thesis 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

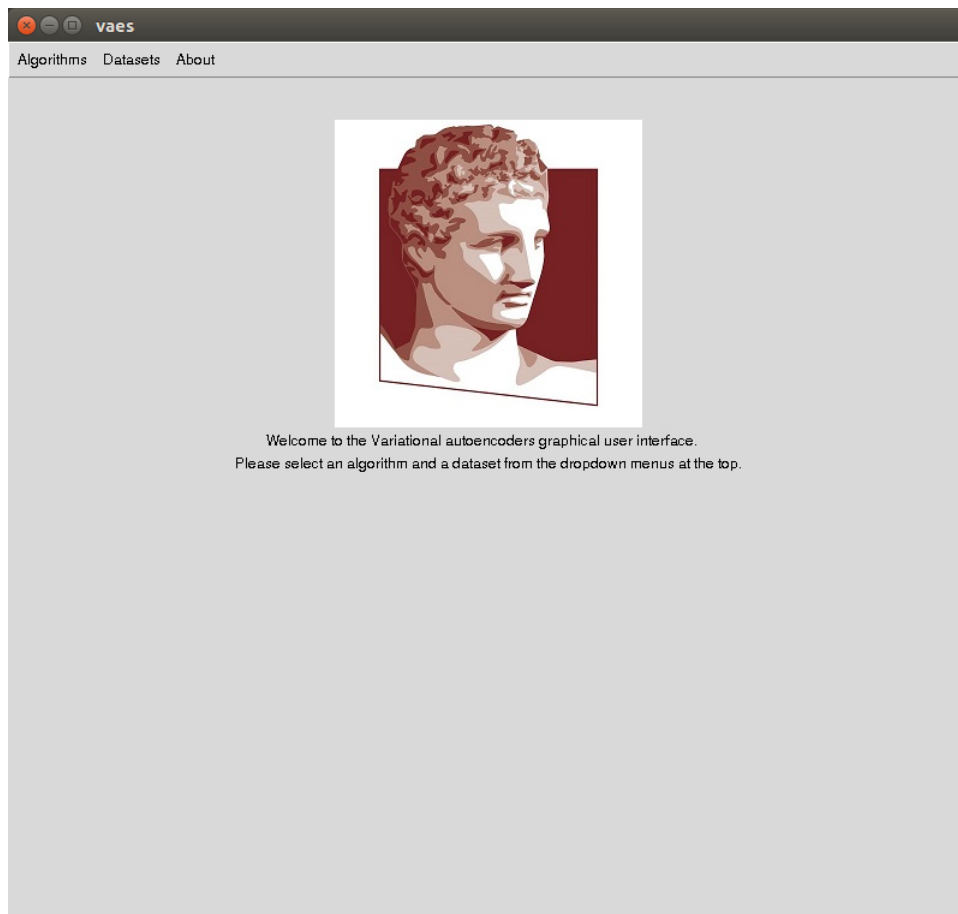


Figure 1: GUI Welcome page.



(a) GUI Algorithms dropdown menu.



(b) GUI Datasets dropdown menu.

Figure 2: Dropdown menus.

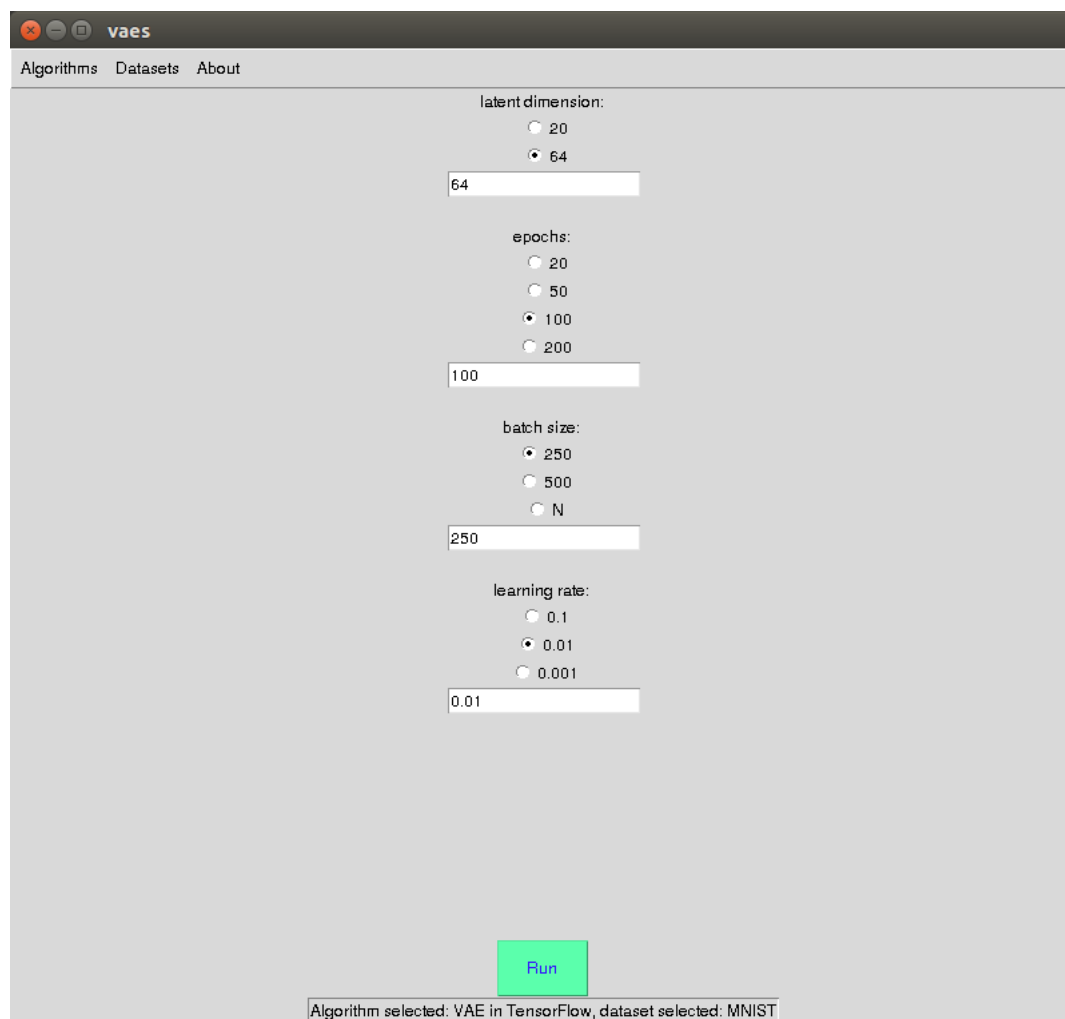


Figure 3: GUI VAE in TensorFlow, MNIST dataset.

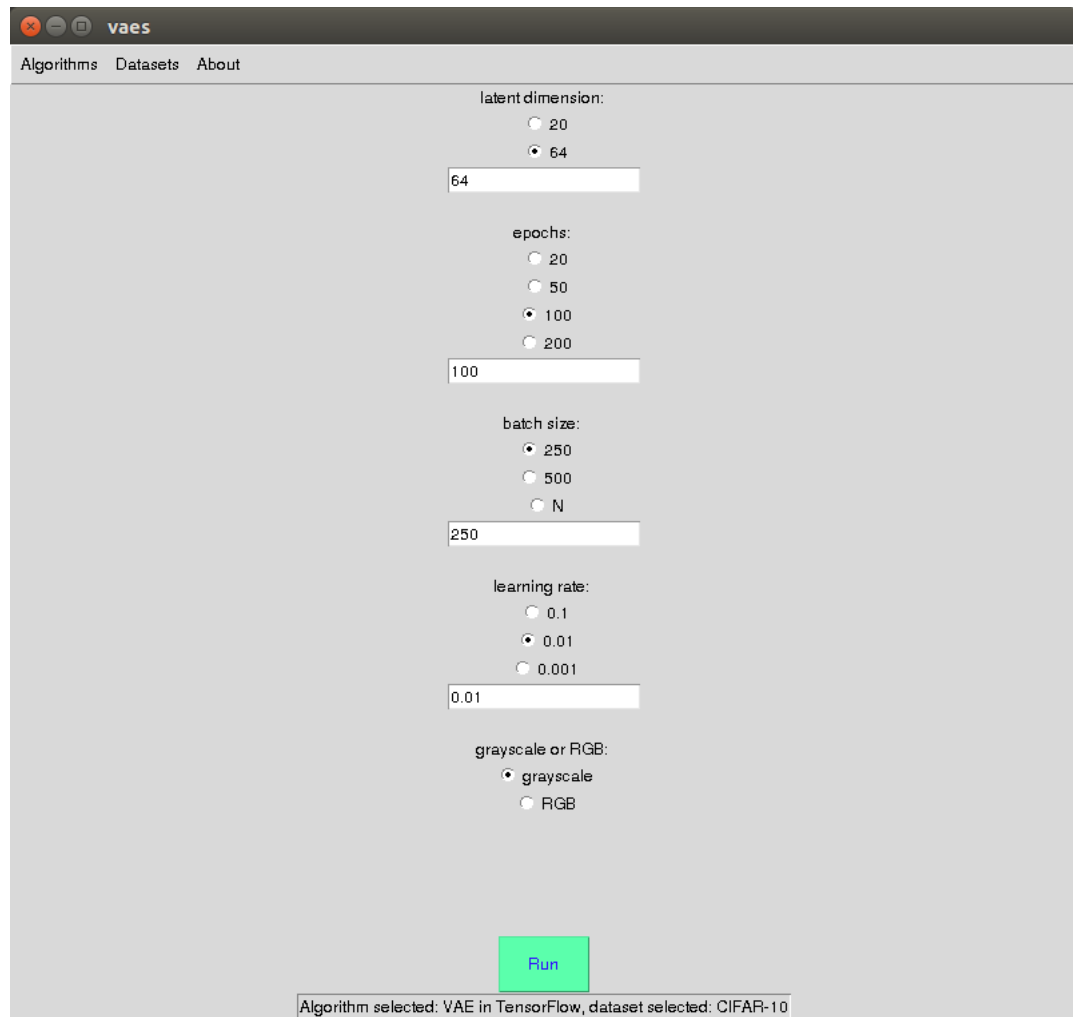


Figure 4: GUI VAE in TensorFlow, CIFAR-10 dataset.

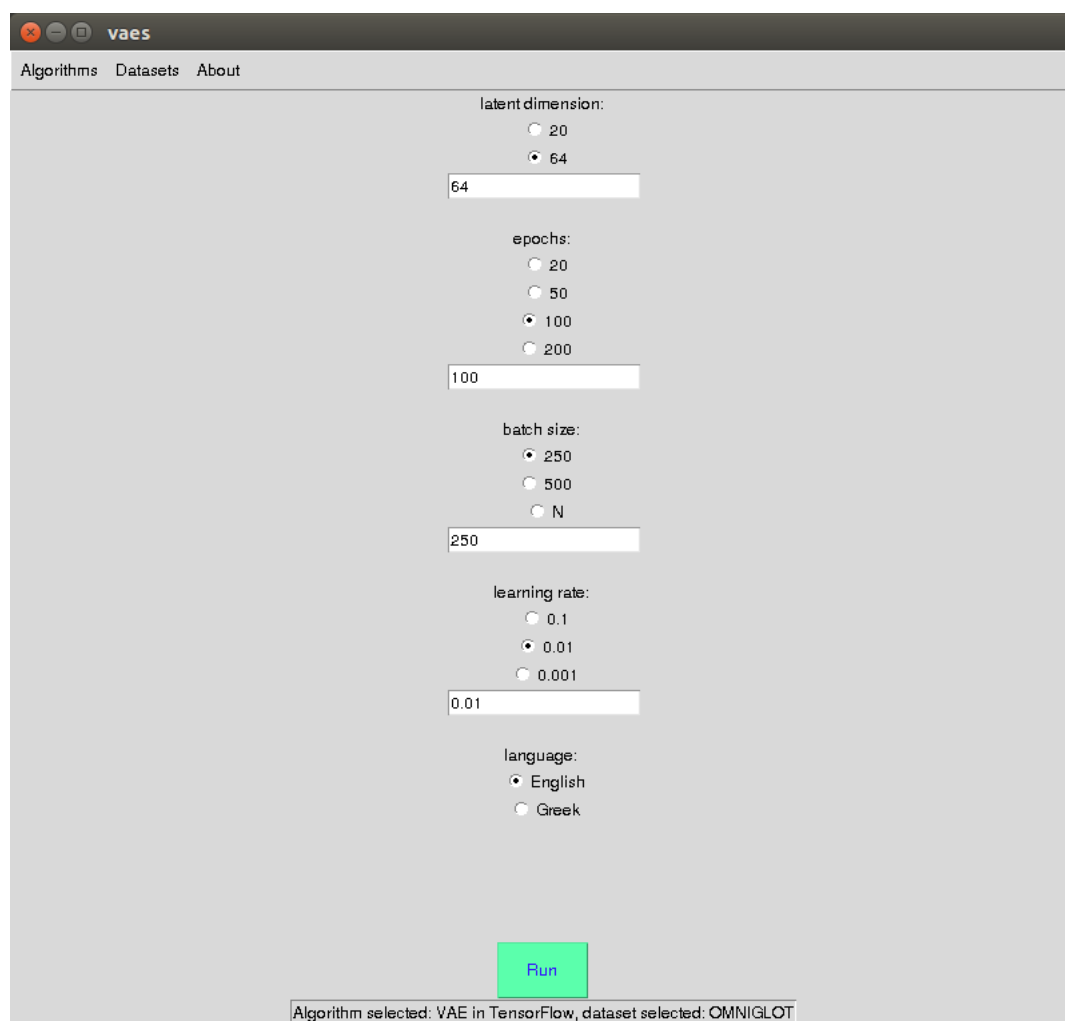


Figure 5: GUI VAE in TensorFlow, OMNIGLOT dataset.

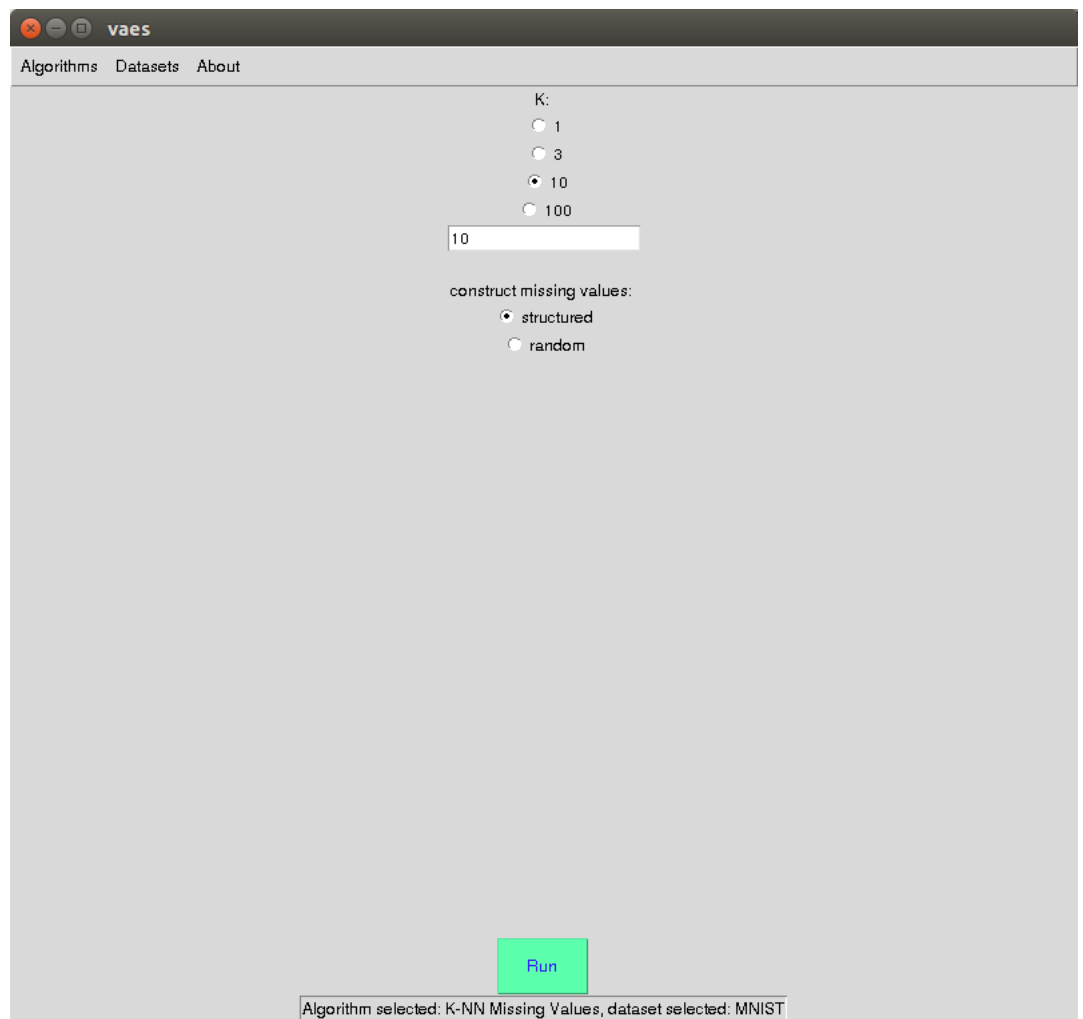


Figure 6: GUI K-NN Missing Values algorithm, MNIST dataset.

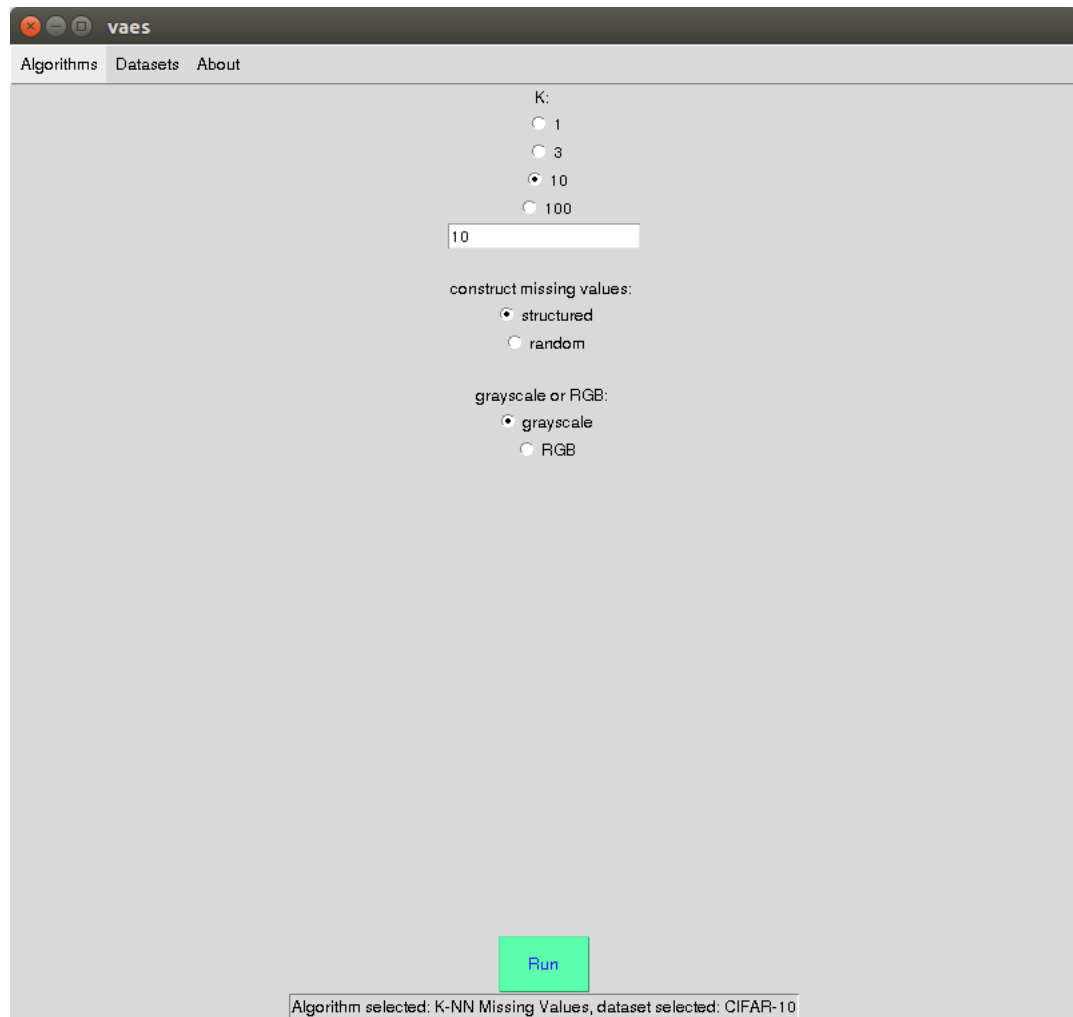


Figure 7: GUI K-NN Missing Values algorithm, CIFAR-10 dataset.

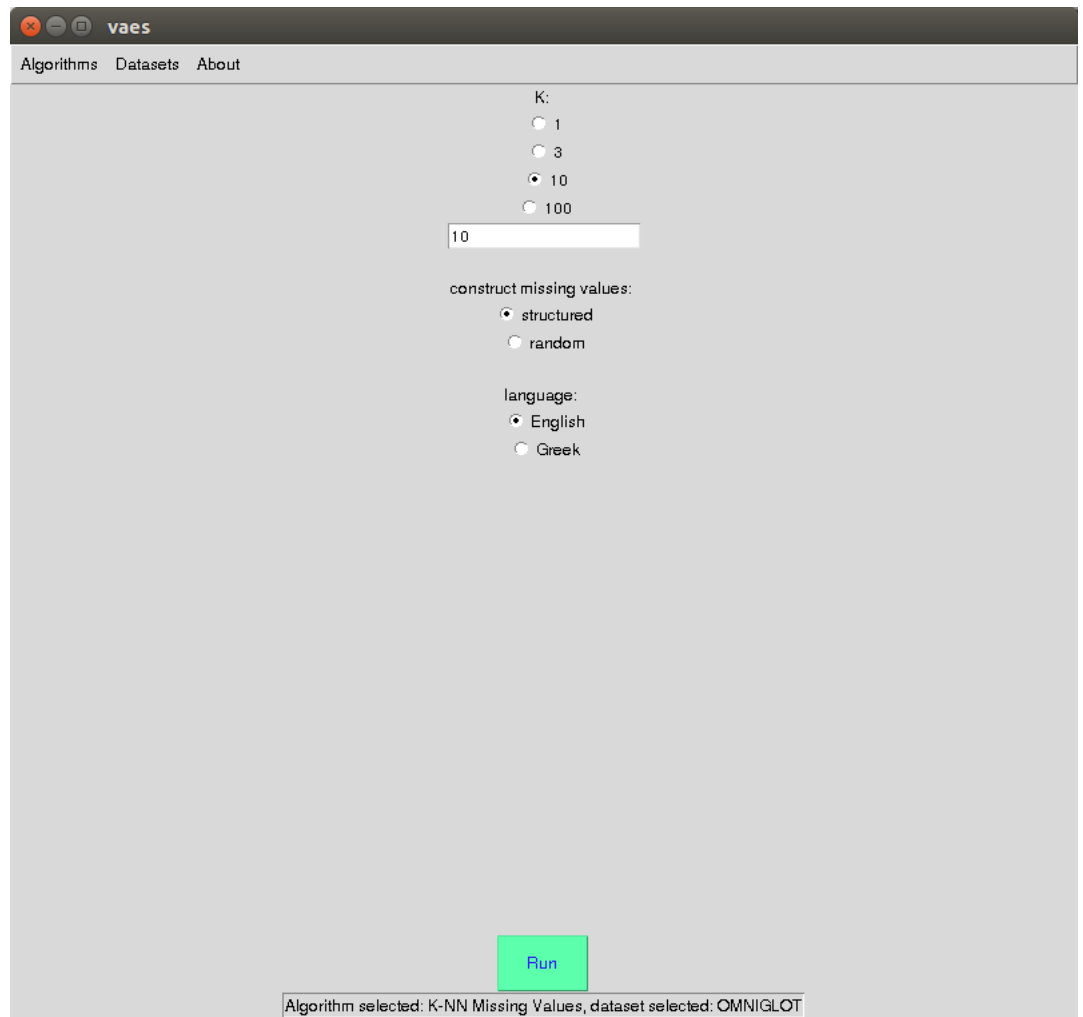


Figure 8: GUI K-NN Missing Values algorithm, OMNIGLOT dataset.

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

Figure 9:
GUI datasets details.

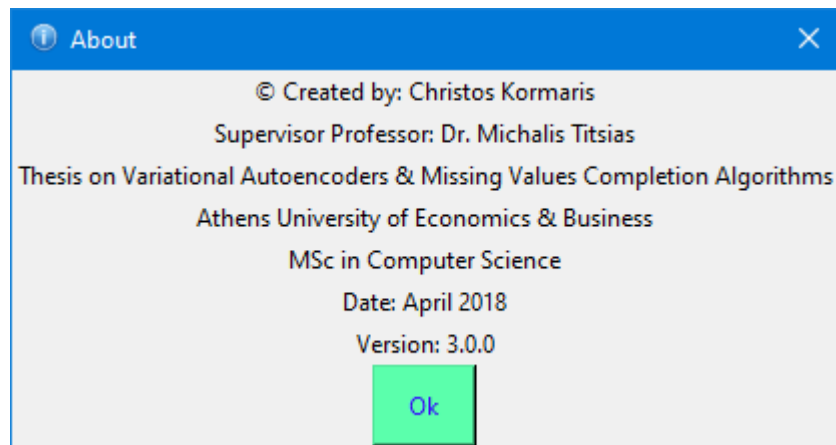


Figure 10: GUI About.