



NEW MEDIA &  
COMMUNICATION  
TECHNOLOGY

# Project 4

## Installatiehandleiding

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## 1. Benodigheden

1. Pc
2. Jupyter notebook
3. Pycharm
4. Tensorflow
5. Keras

## 2. Hoe installeren

### Downloaden van de code

1. Download alle bestanden die ingediend werden op Leho.
2. Pak alles uit de gedownloade folder uit en plaats het in een map op uw pc.

### Tensorflow

1. Zonder GPU support
  - a. Open cmd op windows en tik volgende commando's in:

```
1. pip3 install tensorflow
2. pip3 install keras
```

2. Met GPU support
  - a. Installeer NVidia Cuda toolkit 10.0 installeren:  
<https://developer.nvidia.com/cuda-10.0-download-archive>
  - b. Installeer NVidia Deep Neural Network library CUDNN 7.0. installeren:  
<https://developer.nvidia.com/cudnn>
  - c. Open cmd op windows en tik volgende commando's in:

```
1. pip3 install tensorflow
2. pip3 install keras
```

- d. Indien uw installatie niet werkt of indien u foutmeldingen krijgt is volgende video een goede tutorial om te volgen als installatie:  
[https://www.youtube.com/watch?v=KZFn0dvPZUQ&list=PLoavBIWWQxm\\_r3qXuy1uUqpGKlv-kTvJpC&index=3&t=614s](https://www.youtube.com/watch?v=KZFn0dvPZUQ&list=PLoavBIWWQxm_r3qXuy1uUqpGKlv-kTvJpC&index=3&t=614s)

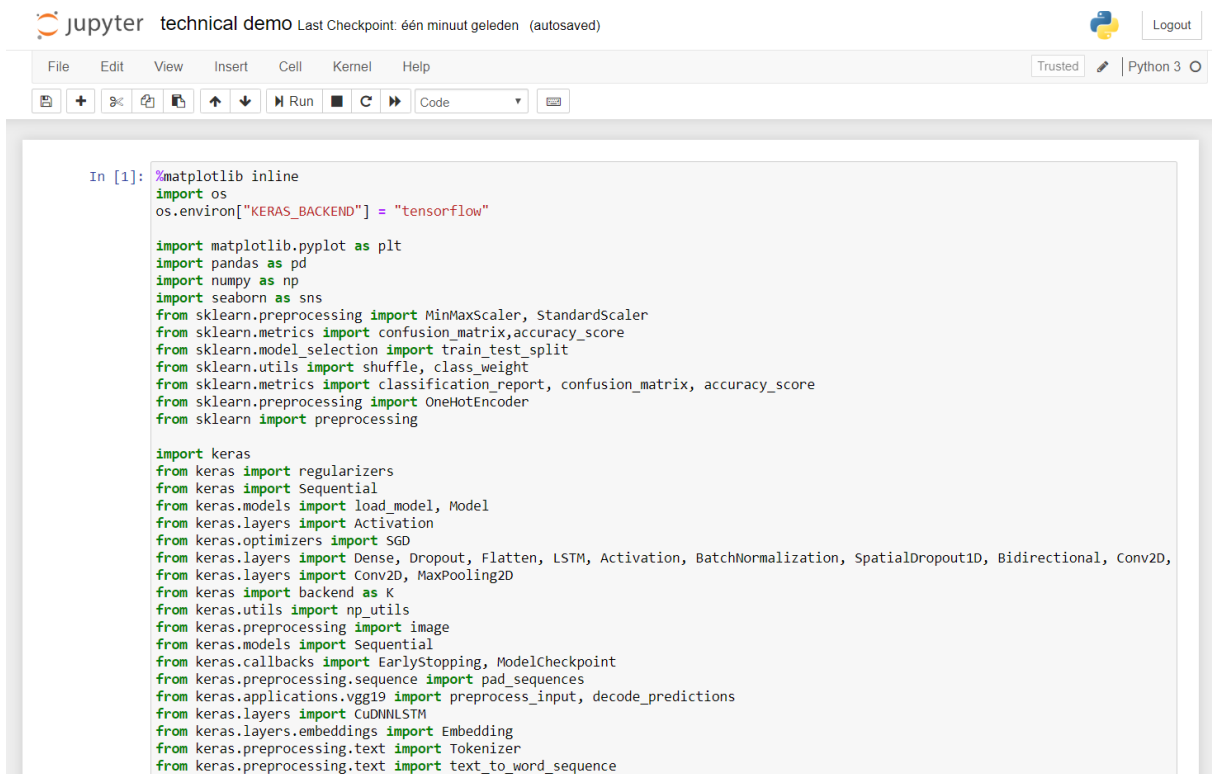
### Jupyter notebook

1. Instaleer jupyter notebook
  - e. Open cmd op windows en tik volgende commando's in:

```
1. pip install jupyterlab
2. Jupyter notebook
```

3. Eenmaal u deze commando's heeft uitgevoerd zal uw browser openen.
4. Navigeer naar de map waar u de gedownloade files uit de 1<sup>ste</sup> stap plaatste.
5. Open "Project 4/model/Final models/ technical demo".

- Run vervolgens alle cellen in de juiste volgorde (van boven naar onderen) door in een cel te staan en bovenaan te klikken op “run”.



The screenshot shows a Jupyter Notebook interface with the title 'technical demo'. The top bar indicates 'Last Checkpoint: één minuut geleden (autosaved)' and a 'Logout' button. The menu bar includes File, Edit, View, Insert, Cell, Kernel, and Help. The toolbar shows icons for file operations and a 'Run' button. The code cell contains the following imports:

```
In [1]: %matplotlib inline
import os
os.environ["KERAS_BACKEND"] = "tensorflow"

import matplotlib.pyplot as plt
import pandas as pd
import numpy as np
import seaborn as sns
from sklearn.preprocessing import MinMaxScaler, StandardScaler
from sklearn.metrics import confusion_matrix, accuracy_score
from sklearn.model_selection import train_test_split
from sklearn.utils import shuffle, class_weight
from sklearn.metrics import classification_report, confusion_matrix, accuracy_score
from sklearn.preprocessing import OneHotEncoder
from sklearn import preprocessing

import keras
from keras import regularizers
from keras import Sequential
from keras.models import load_model, Model
from keras.layers import Activation
from keras.optimizers import SGD
from keras.layers import Dense, Dropout, Flatten, LSTM, Activation, BatchNormalization, SpatialDropout1D, Bidirectional, Conv2D,
from keras.layers import Conv2D, MaxPooling2D
from keras import backend as K
from keras.utils import np_utils
from keras.preprocessing import image
from keras.models import Sequential
from keras.callbacks import EarlyStopping, ModelCheckpoint
from keras.preprocessing.sequence import pad_sequences
from keras.applications.vgg19 import preprocess_input, decode_predictions
from keras.layers import CuDNNLSTM
from keras.layers.embeddings import Embedding
from keras.preprocessing.text import Tokenizer
from keras.preprocessing.text import text_to_word_sequence
```

## PyCharm

1. Navigeer naar de map waar u de gedownloade files uit de 1<sup>ste</sup> stap plaatste.
2. Open de map “Project 4\interface”.
3. Open de file “app.py” met PyCharm.
4. Eenmaal PyCharm geopend is, run de file door te klikken op de groene pijl rechtsboven.

5. Eenmaal de code klaar is met op te starten, klik op de link in het output venster.

The screenshot shows the PyCharm IDE with a project named 'interface'. The file 'app.py' is open, displaying the following code:

```

14 # logging.basicConfig(level=logging.INFO, filename='logging.txt', format='%(asctime)s - %(message)s')
15 logging.basicConfig(level=logging.INFO, format='%(asctime)s - %(message)s')
16
17 os.environ['TF_CPP_MIN_LOG_LEVEL'] = '3'
18
19 UPLOAD_FOLDER = join(dirname(realpath(__file__)), 'static\\sounds')
20 UPLOAD_FOLDER_IMAGES_CQT = join(dirname(realpath(__file__)), 'static\\images\\cqt')
21 UPLOAD_FOLDER_IMAGES_SPECTROGRAM_LOG = join(dirname(realpath(__file__)), 'static\\images\\spectrogram_log')
22 UPLOAD_FOLDER_IMAGES_PLOT = join(dirname(realpath(__file__)), 'static\\images\\plot')
23 ALLOWED_EXTENSIONS = {'wav'}
24 ALLOWED_EXTENSIONS_IMAGES = {'png'}
25
26 app = Flask(__name__)
27 app.config['UPLOAD_FOLDER'] = UPLOAD_FOLDER
28 app.config['UPLOAD_FOLDER_IMAGES_CQT'] = UPLOAD_FOLDER_IMAGES_CQT
29 app.config['UPLOAD_FOLDER_IMAGES_SPECTROGRAM_LOG'] = UPLOAD_FOLDER_IMAGES_SPECTROGRAM_LOG
30 app.config['UPLOAD_FOLDER_IMAGES_PLOT'] = UPLOAD_FOLDER_IMAGES_PLOT
31 app.secret_key = os.urandom(20)
32
33 saved_model = tf.keras.models.load_model('best_big_cqt_90_h5')
34
35
36 def allowed_file(filename):

```

The output console at the bottom shows the following logs:

```

2020-01-20 19:06:21.704153: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1740] Making visible gpu devices: 0
2020-01-20 19:06:24.204917: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1159] Device interconnect StreamExecutor with strength 1 edge matrix:
2020-01-20 19:06:24.205234: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1165]      0
2020-01-20 19:06:24.205421: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1178] 0:  N
2020-01-20 19:06:24.208265: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1304] Created TensorFlow device (/job:localhost/replica:0/task:0/device:GPU:0 with 4788 MB memory) -> physical GPU (dev
2020-01-20 19:06:25.934 - * Running on http://127.0.0.1:5000/ (Press CTRL+C to quit)

```