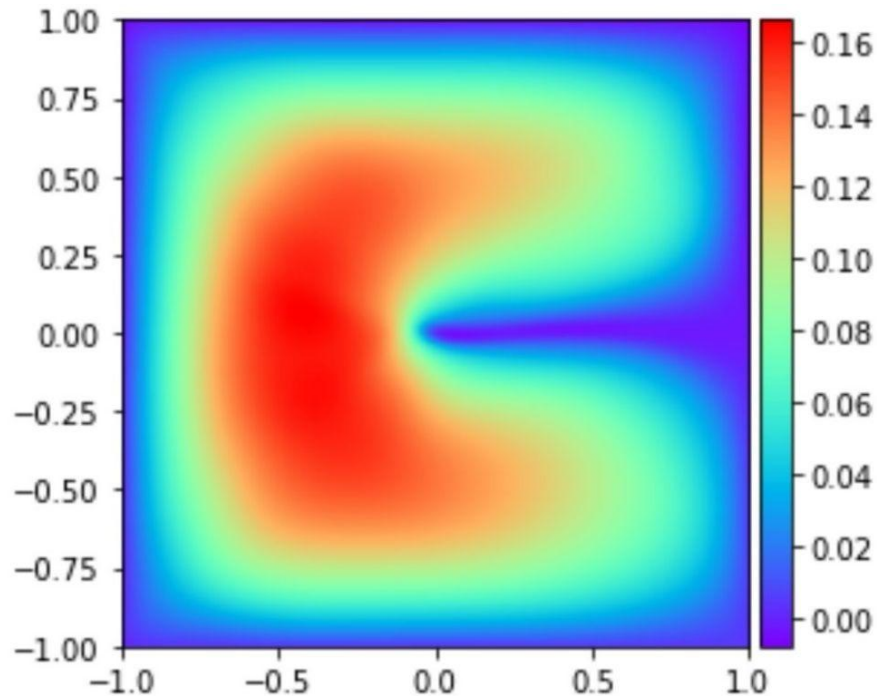
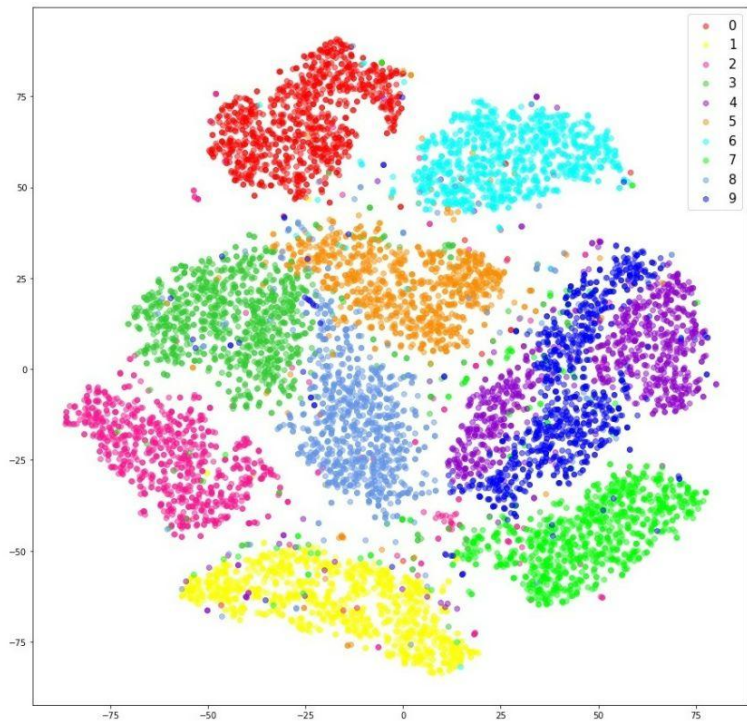


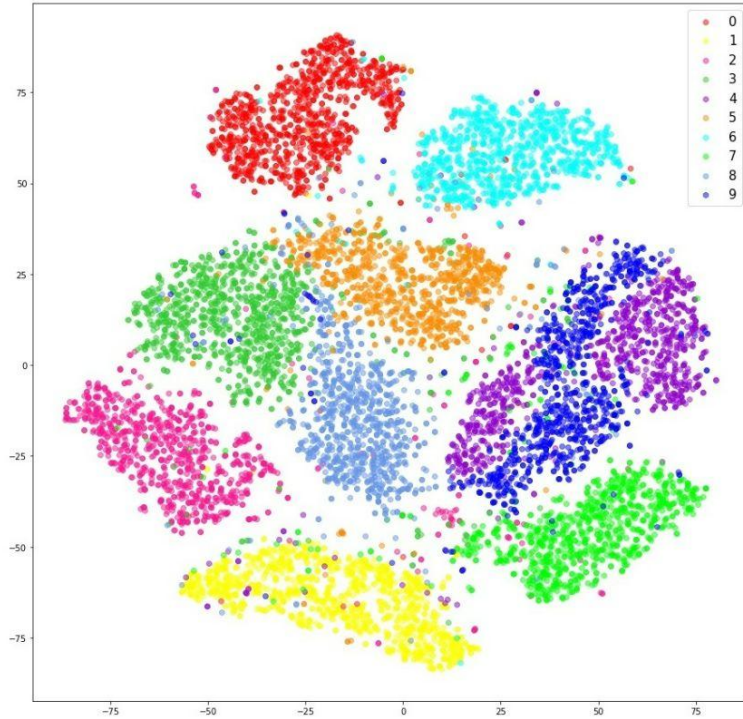
A Taste of Deep Learning through Python

Summer 2022

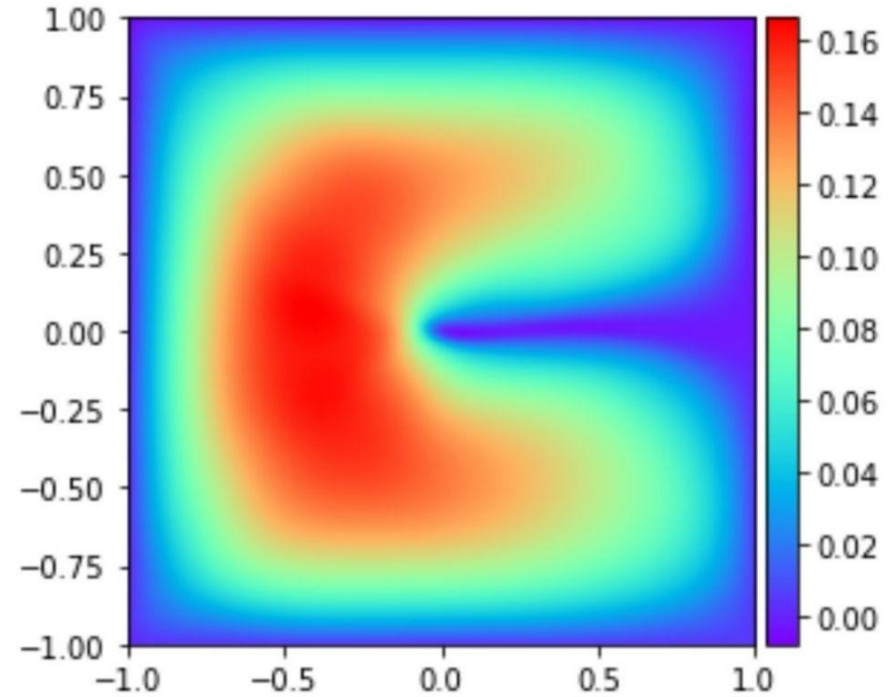
Any relation between the two problems?



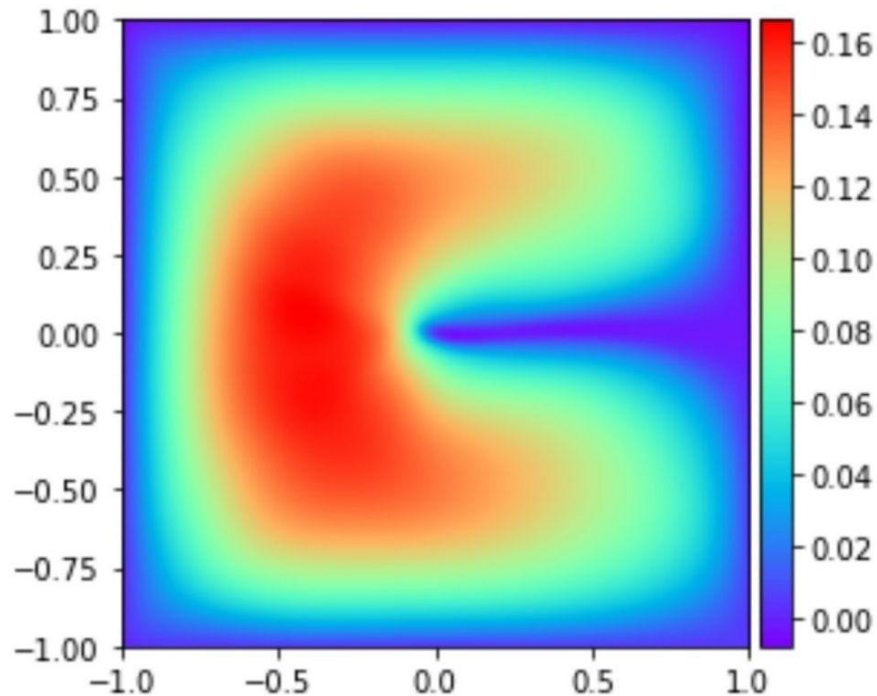
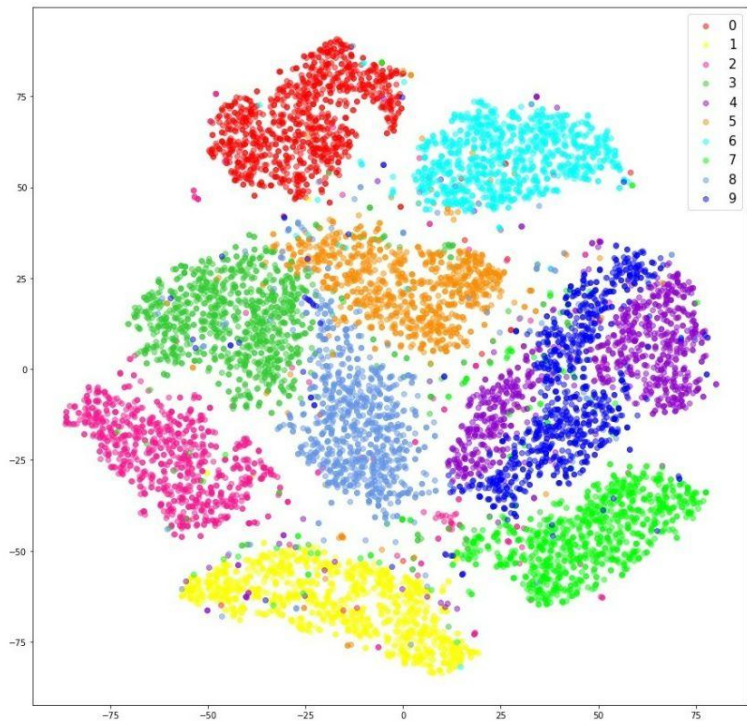
Classification Problem For Handwritings



Boundary Value Problem On Physical System



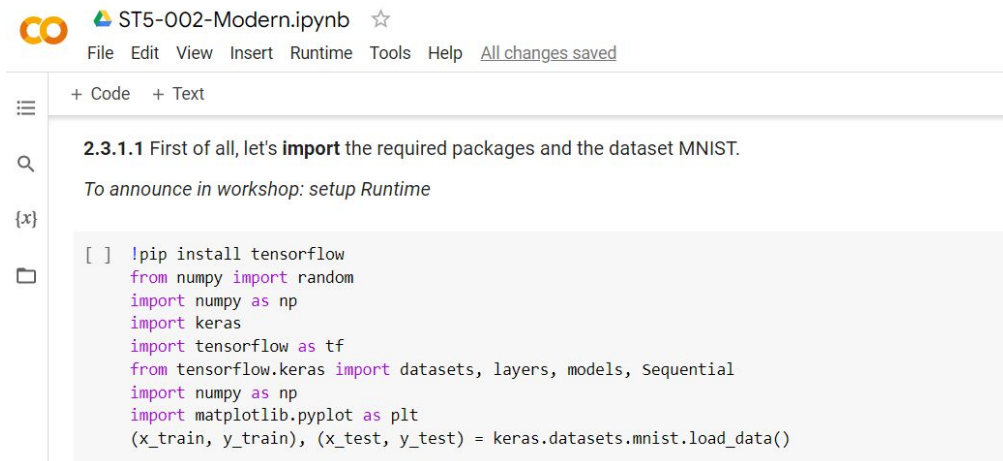
Yes, there are some colorings on both sides



What's more...

Both problems can be tackled numerically in the “Deep Learning” approach with Python Package like TensorFlow/PyTorch

What to expect In the end of the workshop

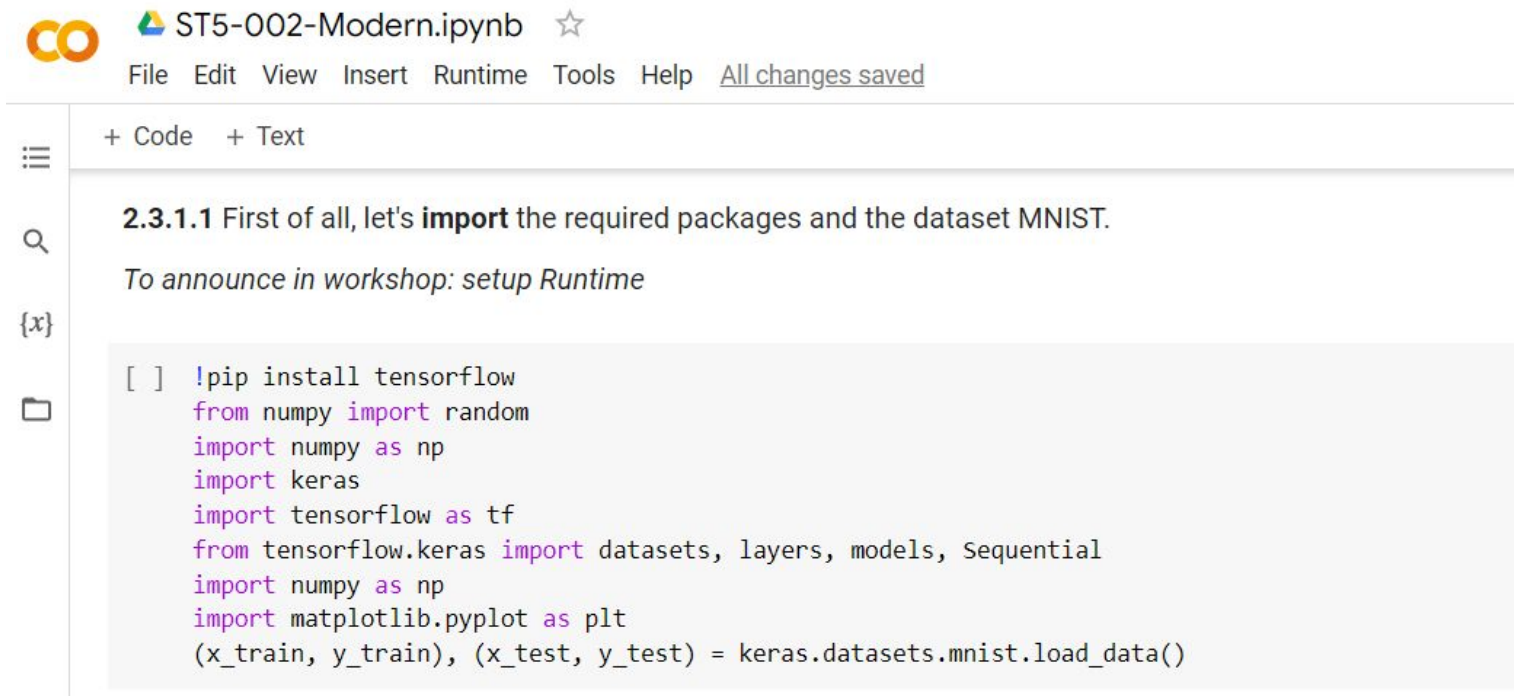


The screenshot shows a Jupyter Notebook titled "ST5-002-Modern.ipynb". The interface includes a menu bar with "File", "Edit", "View", "Insert", "Runtime", "Tools", and "Help", along with a status "All changes saved". On the left, there are icons for a table of contents, search, and a file explorer. The main area displays a code cell with the following Python code:

```
[ ] !pip install tensorflow
    from numpy import random
    import numpy as np
    import keras
    import tensorflow as tf
    from tensorflow.keras import datasets, layers, models, Sequential
    import numpy as np
    import matplotlib.pyplot as plt
    (x_train, y_train), (x_test, y_test) = keras.datasets.mnist.load_data()
```

(Well, we may demonstrate how to tackle the two problems with the deeping learning approach after a brief introduction on linear regression, composition of functions and optimization)

Begin to see some some deep learning codes with Python



The screenshot shows a Jupyter Notebook interface. At the top, there is a logo and the text "ST5-002-Modern.ipynb" with a star icon. Below this is a menu bar with "File", "Edit", "View", "Insert", "Runtime", "Tools", "Help", and a link "All changes saved". The left sidebar contains icons for a list, search, a variable "{x}", and a folder. The main area has a tab bar with "+ Code" and "+ Text". Below the tab bar, there is a text block "2.3.1.1 First of all, let's **import** the required packages and the dataset MNIST." followed by a note "To announce in workshop: setup Runtime". Below this is a code cell with the following Python code:

```
[ ] !pip install tensorflow
    from numpy import random
    import numpy as np
    import keras
    import tensorflow as tf
    from tensorflow.keras import datasets, layers, models, Sequential
    import numpy as np
    import matplotlib.pyplot as plt
    (x_train, y_train), (x_test, y_test) = keras.datasets.mnist.load_data()
```