

TIES 4911 (2024): Guidelines for the Task 1

Your surname:
Your first name:



Chose and prepare implementation environment...

Study lecture materials... Refer to the examples in the materials to complete following sub-tasks:

Basic tasks:

Task 1-1: Build some TensorFlow graph(s) (using TF2) with more than 10 operations. Use constants, variables and functions. Perform their computation and print out the results. Use TensorBoard for graph visualization.

Task 1-2: Find some real data set (or build your own toy dataset) with at least 30 samples to perform Linear Regression with simple Linear Regressor (using TF implementation), Scikit-learn based Linear Regressor and Keras based Linear Regressor. Show the trained model parameters (loss, accuracy, etc.) for each solution and visualize the prediction results on plot. Run predictions on several selected inputs and compare predicted values.

Extra task for those who are aiming higher (optional):

Task 1-3 (extra): Try to improve your Keras based solution (from previous task) to get better model and as result a better prediction... (Hint: you may play with network architecture and training hyper-parameters: learning rate, optimization algorithm, activation functions, number of epochs, batch sizes, etc.). Show the results and corresponding configurations in the table.

It is recommended to look at TensorFlow *Regression Tutorial*:
<https://www.tensorflow.org/tutorials/keras/regression>

Files to include in the demo results (archive file [ties4911-task01-\(your_surname\).zip](#)):

- *Task1-instructions.doc (this file)*
- *PPT presentation with (corresponding screenshots, comparisons, dataset examples, etc.)*
- *source codes (.py or .ipynb files)*

Send the results as an archive to lecturer (oleksiy . khriyenko @ jyu . fi) before the deadline (end of 25.01.2024).

Be ready to present and comment your results during the Demo-1 Session. Be sure that you have all the necessary adapters to connect your computer in the classroom (if applicable).