



MACHINE LEARNING IN GRAPHICS & VISION

EXERCISE 0

Release date: Thur, 19. April 2018 - **Deadline for Homework: Wed, 25. April 2018 - 21:00:00**

Important Information

a) Exercise Procedure via “ILIAS”

- We will organize the exercises sheets and your submissions using the **ILIAS**-System (<https://ovidius.uni-tuebingen.de/ilias3>).
- **Please register by no later than Monday, 23.04.18 23:59 as follows:**
 1. Go to the ILIAS-website and login into your account using your personal ZDV credentials.
 2. In section **Informatik/Computergrafik** please enroll into the lecture **Machine Learning in Graphics & Vision**. Direct-Link is https://ovidius.uni-tuebingen.de/ilias3/goto.php?target=crs_1665535&client_id=pr02
 3. You will need to provide some information there (name, matriculation number, ...).
 4. *After* completing the survey, you should be able to download your first homework from the **Exercise-Sheets** section.
 5. Please upload – although you get no points this time – your solution for the tasks below into ILIAS, to familiarize yourself with the system.
- **Exercise sheets** will be available on each Thursday after the lecture in the ILIAS system for download. Please solve these homeworks until the next Wednesday 21:00:00. The submission deadline will be stated in each exercise sheet.
 - We encourage you to discuss these homeworks within a group. You are eligible submit the solution of a group of up to 2 people. But you are responsible yourself to submit the solution for the homework.
 - By continuous and active participation in the weekly exercises, students may obtain a 0.3 bonus on the final grade, if and only if passing the exam. To qualify for this bonus, the student must successfully solve 60% of the assigned homework problems which will be determined by grading the submitted homework solutions.

b) Submitting your solutions:

- Please compress your submission using the ZIP format and *only* include necessary files.
- We will provide a template for most tasks to avoid potential confusions. Please follow them to ensure a smooth procedure.

c) Infrastructure:

- You are eligible to use the computer pool at Sand 14, Room XX. Notice, you will need to request a WSI-account (not ZDV!) to use the computers there. The application for a WSI account will be distributed in the first lecture and exercise group meeting.
- Testing WSI login data and using a SSH connection to access our hardware can be done by

```
1 user@local$ ssh <username>@cgcontact.informatik.uni-tuebingen.de -T
2 Welcome to the WSI network!
3 Please ssh into another machine.
```

Exercises

0.1 Basic Python Setup (0 Points)

Solving the exercise sheets will contain tasks, which require to create a Python implementation. To ensure a working environment, we ask you to setup your environment accordingly:

a) Using Ubuntu (Computer-Pool):

- Please install Python (version ≥ 2.7) and the pip package manager (see instructions at <https://pip.pypa.io/en/latest/installing/>). (not necessary in the computer-pool)
- We will use the NumPy and TensorFlow libraries. So install them by

```
1 pip install numpy --user
2 pip install tensorflow-gpu --user
```

- Testing your setup can be done by successfully running these commands in your terminal:

```
1 python -c "import numpy as np; print('NumPy' + np.__version__)"
2 python -c "import tensorflow as tf; print('TensorFlow'+ tf.__version__)"
3 python -c "import tensorflow as tf; tf.InteractiveSession()"
```

b) Using Mac OSX and Windows: Please note, we cannot guarantee working instructions for these systems. Please set up these systems yourself, when relying on them.

0.2 Testcase (0+0+0 Points)

We ask you to implement the following a small Python script.

```
1 import tensorflow as tf
2 import numpy as np
3
4 pi_value = ...
5 msg_op = tf.constant('Pi is approx. %f' % pi_value)
6 with tf.Session() as sess:
7     sess.run(msg_op)
```

- a) Fix the implementation to print out the message with an approximation of π in your terminal.
- b) Prepend the implementation by the comment # Name: Your Name (Matriculation Number)
- c) Pack your solution into a ZIP file and upload it to the ILIAS system.