Kiel University
Christian-Albrechts-Universität zu Kiel

Exercise Sheet 1
Intelligent Systems
October 29, 2019

Organisation

Welcome to the course *Intelligent Systems*. During this semester, our eponymous working group is looking forward to introduce you to the fields of *Intelligent Systems*, *Organic Computing*, and *Autonomous Learning*. The exercise is meant to reflect the learned concepts, find different scenarios and their applications. Solutions will be discussed during lessons and do not need to be submitted. The latter may take the form of hand-written, source code, or presentation content. The first exercise lesson will take place at LMS2 - R.Ü3 on Tuesday the 29th of October. Please bring your laptops to the exercise.

Exercise 1 - Prerequisites

During the exercise we will run our code in an jupyter notebook environment. This means you need to bring a laptop with a browser on it.

A. Follow the Anaconda installation guide (→ OpenOlat → *Install_Anaconda_en.pdf*), which will also install the jupyter notebook environment.

B. Install the suggested package and find out more about the following packages:
   - NumPy (→ https://numpy.org/devdocs/user/quickstart.html)
   - scikit-learn (→ https://scikit-learn.org/stable/tutorial/basic/tutorial.html)
   - pandas (→ https://pandas.pydata.org/pandas-docs/stable/getting_started/10min.html)

C. NumPy and pandas are both featuring a new kind of data structure. Explain NumPy's and panda's data structures in more detail and mention the differences.

D. Try to find out more about the following basic concepts of python:
   - Simple data structures (list, dictionaries, list comprehensions, etc.)
   - Control flows (Loops, If-then-else statements, etc.)
   - Definition and usage of functions
   - Import of packages and modules

E. To try out things in your free time (which we recommend) install iPython (see http://ipython.org/install.html for details) with the notebook extension on your own machine. If you prefer using a full-size IDE, have a look at PyCharm (see https://www.jetbrains.com/pycharm/ for details. The community edition will do.).