Exercise Sheet 2
Intelligent Systems
November 05, 2019

Design

Exercise 1 - Observer/Controller Pattern

Explain the Observer/Controller pattern by choosing your own example. In detail, start with a real-world application and explain how the system can be optimised with the O/C Pattern by Observation and Control.

Exercise 2 - Distribution variants

A. Classify the following distriuted systems into one of the categories: *fully centralised*, *fully decentralised*, and *hybrid*.

B. Explain your decision by describing communication channels, process flows, and the level of autonomy.

- P2P Network
- VCS GIT
- Ant colony
- Internet

Exercise 3 - Python Visualization: WSA LÜBECK

A. Download historical water level data for the period of October 2019 (1st of October until 31st of October) https://www.pegelonline.wsv.de/webservices/files/Wasserstand+Rohdaten/OSTSEE/LT+KIEL. (Hint the tool *wget* might help)

B. Load the data into a single *pandas* dataframe

C. Visualize the dataframe via *matplotlib*

D. Approximate the water levels with the usage of *numpy.polyfit*