Technische Hochschule Ingolstadt, M-APE, Prof. A. Schiendorfer Lukas Lodes M.Sc.

Intro to AI and Neural Networks (Summer 2022)

Assignment 02

Exercise 1 *(Discussion about Artificial Intelligence)*

  a) What is your personal definition of (artificial) intelligence? Which aspects differ from the expositions in the lecture?

  b) What kind of image about AI may have people from outside the field based on current movies, news etc.?

  c) Will machines take over the world in a few decades?

Exercise 2 *(Spam detector in Python)*

Implement the spam detection classifier (slide 29 in "Lecture 1 - Introduction") in Python. You can do this by following the steps below:

- Transfer the data set on slide 29 into an appropiate Python data structure

- Implement the classifier on slide 29 that takes into account the three features "Occurences Bank", "Occurences 1 000 000" and "Occurences Best regards". For each input, the output should be either "True" or "False". *Hint: You may be able to reuse some of the code you already implemented in assignment 1.*

- Write Python to calculate the accuracy of the clasifier's predictions.

- Play around with different weights and see if you can further improve the accuracy.
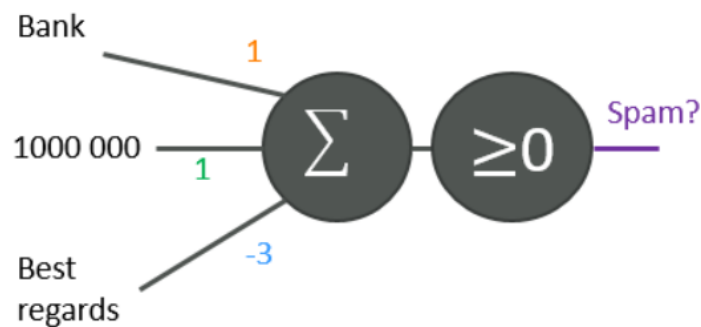
Occurrences „Bank"	Occurrences „1000 000"	Occurrences „Best regards"	Spam (Prediction)	Spam (Fact)
1	0	1	(1) YES	YES
1	0	2	(0) YES	YES
1	2	0	(2) YES	NO
0	1	1	(-1) NO	NO
0	0	1	(-1) NO	NO

Exercise 3 *(A primer in NumPy)*

Similarly to last week's warm-up in general Python, we prepared a Jupyter notebook on NumPy specifically. NumPy offers vectorized, pre-compiled instructions for systems of multi-dimensional arrays (vectors, matrices, tensors). Again, we advise you to use `https://colab.research.google.com/` or setup your own environment using `https://www.anaconda.com/` with a conda environment for this class

Work through our prepared Jupyter notebook `NumPy-Primer.ipynb`. Fill in the small coding exercises written in boldface. For the other cells, make an educated guess what you expect the output to be and then check your assumptions by executing the cells.