Artificial Intelligence Exam Task

Objective

The objective of this task is to enable you to demonstrate the knowledge of artificial intelligence and machine learning acquired during the elective AI course.

Task

The task is to create a machine learning based solution to a real life problem.
To fulfill the task, you need to follow the procedure below:

1. Research and select an application area and a real life problem, related to human practice of using data. It can be any brand of business or social activity, self-service or entertainment.
2. Collect and prepare appropriate data for developing a solution
   The preparation includes operations ensuring that the data is
   a. meaningful – describes relevant and correctly measured features and observations
   b. sufficient – describes various cases and feature occurrences, decided by testing
   c. shaped – presented in a structure, appropriate for processing by machine learning algorithms
   d. cleaned – repaired from missing values and outliners
   e. scaled – transform data distributions in comparable scales, when necessary
   f. engineered – features analyzed and the most informative selected for further processing
3. Train appropriate models that can solve the problem
   Select at least two, or more machine learning algorithms to train a model based on a training data set.
   Choose between supervised and unsupervised methods, or implement neural networks and deep learning.
4. Test the models created by the learners
   Implement the models on the test data sets to predict the output.
5. Validate the models
   Calculate appropriate parameters validating the accuracy of prediction.
   Iterate the operations listed above, trying to improve the quality of the models, as much as possible.
6. Compare the results of validation and select the best performing model.
7. Store the trained model for further implementation.
8. Create a simple web application to interact with the model
9. Demonstrate the operability of the final product testing it with new and unknown data.

Report

There is no requirement for traditional report. You deliver Jupyter notebook, provided in two formats: `ipynb and pdf.`
The notebook includes both

- code and
- explanation of the solution development process.

Consider taking use of visual illustrations and diagramming in the text.
Consider including conclusion and self-reflection in it.

Exam

The exam is individual and oral, censored and graded. It takes up to 30 minutes per student, including the grading. During the exam you are expected to make a short presentation and a demonstration of your product, and then answer questions of the examiners. The questions refer to the project, but are not limited to it, and may relate to other topics from subject curriculum.

Wish you success,
the instructor