

Quiz-2 Math of Network Algo. (6th Sept 2023)

Name:

Enroll. Nr.

- (6 pts) Describe (i) Artificial Intelligence, Machine Learning, and Deep Learning; (ii) Parameters and Hyperparameters; (iii) Underfitting and Overfitting;
- (8 pts) Compute maximum likelihood estimation of the relevant parameters for Bernoulli Distribution.
- (8 pts) Design a Multilayer Perceptrons that determines if a list of length 4 is in sorted order, i.e, it receive four inputs x_1, x_2, x_3, x_4 , where $x_i \in \mathbb{R}$, and outputs 1 if $x_1 < x_2 < x_3 < x_4$, and 0 otherwise. Only activation functions allowed are: Sigmoid, Step-Function, or ReLU.
- (8 pts) Use gradient based optimisation to find \mathbf{x} that minimizes $f(\mathbf{x}) = 1/2 \cdot \|\mathbf{Ax} - \mathbf{b}\|_2^2$.