Advanced Machine Learning

Assignment 1

Q1. What's the difference between probability and likelihood?

Q2. Make a comprehensive list of all commonly used evaluation approaches and performance measures for testing ML models for both supervised and unsupervised learning.

Q3. What do you understand by model performance and model accuracy? Explain with example datasets and reasons, which performance measure (from your list) you are going to use for which problem.

Q4. What do you understand by the bias-variance tradeoff in Machine learning? What is their significance in ML?

Q5. What do you understand by L1 and L2 regularization techniques. Explain the differences and the principles for guided choice.

Q6. "The maximal number of linear regions of the functions computed by any rectifier network with a total of N hidden units is bounded from above by 2^N" – Explain with the help of the following reference paper [1].

References

[1]. Guido Montufar, Razvan Pascanu, Kyunghyun Cho, Yoshua Bengio- "On the Number of Linear Regions of Deep Neural Networks" - Advances in Neural Information Processing Systems 27 (NIPS 2014)

[2]. Deep Learning; https://www.deeplearningbook.org/contents/mlp.html