

Machine Learning Guidelines

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|---|---|---|
| 1 | Basic definitions | Reference [2], Chapter 1, page 1-5 |
| 2 | Hypothesis space and inductive bias | Reference [2], Chapter 2, section 2.1 - 2.4 |
| 3 | Bayes optimal classifier and Bayes error, Naive Bayes classifier | Reference [2], Chapter 6, section 6.1, 6.2, 6.7, 6.9 |
| 4 | Curse of dimensionality, dimensionality reduction, feature scaling, feature selection methods | Reference[3] Page 33-35
Reference [1], Chapter 10, |
| 5 | Linear regression with one variable, linear regression with multiple variables | Reference [1], Chapter 7, page 194-205

https://medium.com/analytics-vidhya/linear-regression-with-gradient-descent-derivation-c10685ddf0f4 |
| 6 | Gradient Descent | 1.
https://towardsdatascience.com/introduction-to-logistic-regression-66248243c148
2.
https://medium.com/@shiny_jay/ml-regularization-79a081666fbc
3.
https://medium.com/@qempsi10914/courseras-machine-learning-notes-week3-overfitting-and-regularization-partii-3e3f3f36a287 |
| 7 | logistic regression, over-fitting, regularization. performance evaluation metrics, validation methods | |
| 8 | Decision trees | Reference [2], Chapter 8, page 52 - 60, 63 - 66 |
| 9 | k-nearest neighbor classifier | Reference [2], Chapter 8, page 231-233 |

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| 10 | perceptron, multilayer perceptron, neural networks, back-propagation algorithm | Reference [2], Chapter 4, page 81-99 |
| 11 | Support Vector Machine (SVM), Kernel functions | Reference [1], Chapter 7, section 7.3 Reference [3], Chapter 6, page 292 |
| 12 | Approaches for clustering, distance metrics, K-means clustering, expectation maximization, hierarchical clustering | Reference [3], Chapter 9, page 424-426 Reference [1], Chapter 8, section 8.1, 8.5 |
| 13 | performance evaluation metrics | https://www.kdnuggets.com/2020/05/model-evaluation-metrics-machine-learning.html |
| 14 | validation methods | https://www.analyticsvidhya.com/blog/2021/05/4-ways-to-evaluate-your-machine-learning-model-cross-validation-techniques-with-python-code/ |

1. Flach, P. (2015). Machine Learning: The Art and Science of Algorithms that Make Sense of Data.
2. Mitchell, T.M. (2017). Machine Learning. McGraw Hill Education.

Additional References:

3. Christopher & Bishop, M. (2016). Pattern Recognition and Machine Learning. New York: Springer-Verlag