

Exam Preparation

Machine Learning S. 5 Bachelor WS21/22

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1 Metrics for Evaluating predictions

1.1 Confusion Matrix

1.2 Precision

1.3 Recall

1.4 F1 Score

1.5 Importance of the metrics

2 One-hot encoding

3 Overfitting and underfitting

3.1 How can it be detected?

3.2 Possible solutions

4 PCA - principal component analysis

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5 Python Basics

5.1 Slicing

5.2 Data Extraction with Pandas

6 Regularization

6.1 What is regularization

6.2 Lasso

6.3 Ridge

6.4 Dropout

7 Machine Learning Tasks

7.1 Classification

7.2 Regression

7.3 Clustering

8 MLP - Multi-Layer-Perceptron

8.1 What is MPL?

8.2 Calculation of a number of parameters with and without bias

9 Feature map calculation in convolutional NN

10 Input and output sizes in Neural networks

Describe here: Size of inputs and outputs in MLP and convolutional NN calculated from image size and the number of output classes.

11 Activation functions

11.1 Softmax

11.2 Sigmoid

11.3 RELU

12 Solving non-linear problems with NNs

Use example of logical function XOR here.

13 K-means

14 Gradient Descent

15 Hyperparameters of ML models

15.1 Learning Rate

15.2 Epochs

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16 Logistic Regression and Cross Entropy

17 Linear Regression and Normal Equation

18 Decision Trees

19 K-nearest Neighbors