*** Applied Machine Learning Fundamentals ***
Mathematical Foundations

Daniel Wehner

SAP SE

November 1, 2019

Find all slides on GitHub

Lecture Overview

Unit I	Machine Learning Introduction
Unit II	**Mathematical Foundations**
Unit III	Bayesian Decision Theory
Unit IV	Probability Density Estimation
Unit V	Regression
Unit VI	Classification I
Unit VII	Evaluation
Unit VIII	Classification II
Unit IX	Clustering
Unit X	Dimensionality Reduction

Agenda November 1, 2019

Section:

Introduction

Introduction

Section:

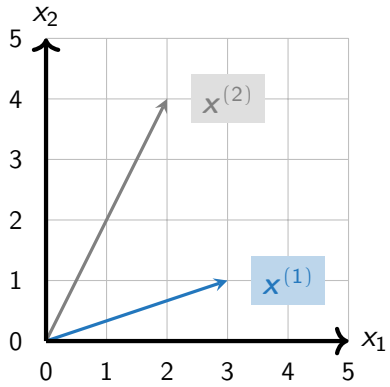
Linear Algebra

What is a Vector?

$$\boldsymbol{x} = \begin{bmatrix} x_1 \\ x_2 \end{bmatrix}$$

$$\boldsymbol{x}^{(1)} = \begin{bmatrix} 3 \\ 1 \end{bmatrix}$$

$$\boldsymbol{x}^{(2)} = \begin{bmatrix} 2 \\ 4 \end{bmatrix}$$



Section:

Statistics

Section:

Optimization

Section:

Wrap-Up

Summary

Self-Test Questions

1.

What's next...?

Unit I	Machine Learning Introduction
Unit II	Mathematical Foundations
Unit III	**Bayesian Decision Theory**
Unit IV	Probability Density Estimation
Unit V	Regression
Unit VI	Classification I
Unit VII	Evaluation
Unit VIII	Classification II
Unit IX	Clustering
Unit X	Dimensionality Reduction

Recommended Literature and further Reading

Thank you very much for the attention!

Topic: *** Applied Machine Learning Fundamentals *** Mathematical Foundations
Date: November 1, 2019

Contact:
Daniel Wehner
SAP SE
daniel.wehner@sap.com

Do you have any questions?