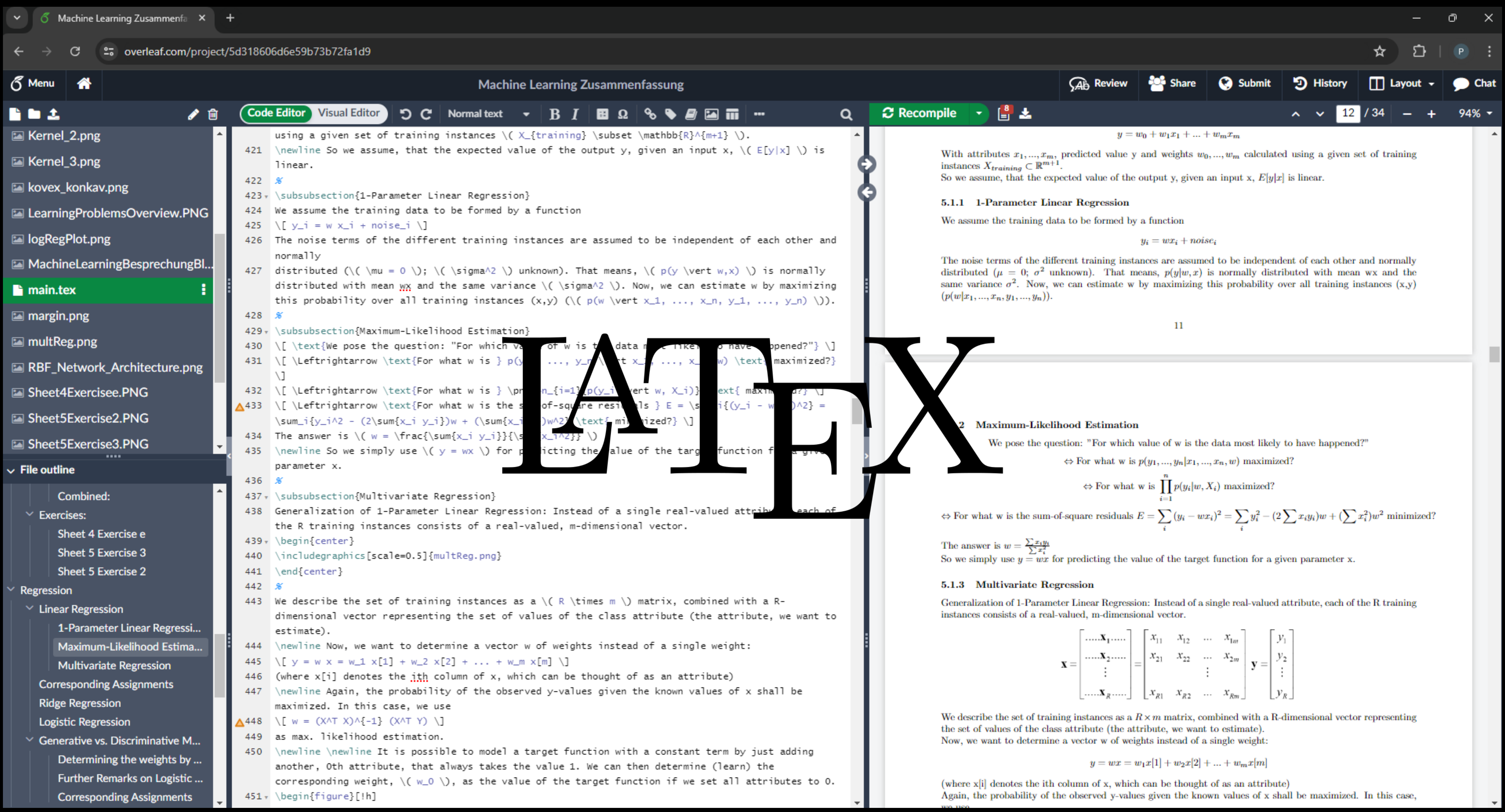
Informatik Q3 Abels

Konzepte und Anwendungen der Theoretischen Informatik

Theoretische Informatik


Machine Learning Zusammenfa
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Submit
History
Layout
Chat
Code Editor
Visual Editor
Normal text
Recompile
12 / 34
94%
Kernel_2.png
Kernel_3.png
kovex_konkav.png
LearningProblemsOverview.PNG
logRegPlot.png
main.tex
margin.png
multReg.png
RBF_Network_Architecture.png
Sheet4Exercisee.PNG
Sheet5Exercise2.PNG
Sheet5Exercise3.PNG
File outline
Combined:
Exercises:
Sheet 4 Exercise e
Sheet 5 Exercise 3
Sheet 5 Exercise 2
Regression
Linear Regression
1-Parameter Linear Regressi...
Maximum-Likelihood Estima...
Multivariate Regression
Corresponding Assignments
Ridge Regression
Logistic Regression
Generative vs. Discriminative M...
Determining the weights by ...
Further Remarks on Logistic ...
Corresponding Assignments
\subsubsection{1-Parameter Linear Regression}
We assume the training data to be formed by a function
\[y_i = w x_i + noise_i \]
\subsubsection{Maximum-Likelihood Estimation}
\subsubsection{Multivariate Regression}
\begin{center}
\includegraphics[scale=0.5]{multReg.png}
\end{center}
\newline Now, we want to determine a vector w of weights instead of a single weight:
\[y = w x = w_1 x[1] + w_2 x[2] + ... + w_m x[m] \]
(where x[i] denotes the ith column of x, which can be thought of as an attribute)
\[w = (X^T X)^{-1} (X^T Y) \]
as max. likelihood estimation.
\begin{figure}[!h]
5.1.1 1-Parameter Linear Regression
We assume the training data to be formed by a function
The noise terms of the different training instances are assumed to be independent of each other and normally distributed
11
Maximum-Likelihood Estimation
We pose the question: "For which value of w is the data most likely to have happened?"
5.1.3 Multivariate Regression
Generalization of 1-Parameter Linear Regression: Instead of a single real-valued attribute, each of the R training instances consists of a real-valued, m-dimensional vector.
We describe the set of training instances as a R × m matrix, combined with a R-dimensional vector representing the set of values of the class attribute (the attribute, we want to estimate).
Now, we want to determine a vector w of weights instead of a single weight:
(where x[i] denotes the ith column of x, which can be thought of as an attribute)
Again, the probability of the observed y-values given the known values of x shall be maximized. In this case,
LATEX

Tagebucheintrag

Setup

Wochenübung

- Schaffe dein persönliches Setup zur Theoretischen Informatik.
- Schaue dir meine Empfehlungen an:
  - Overleaf: https://www.overleaf.com/
  - Overleaf Tutorial: https://www.youtube.com/watch?v=Jp0lPj2-DQA&list=PLHXZ9OQGMqxcWWkx2DMnQmj5os2X5ZR73
  - Latex Tutorial: https://www.youtube.com/watch?v=hRwUjJYeHjw&list=PLuyjaM3Uz-oOS7zcMFaROwrg83KBR1Sui
  - Inhalte auf Youtube: https://www.youtube.com/watch?v=5jFKl_G5QWg&list=PLG_1tsKrsKVO2ANHX68UbrNgt7gZuH37H => NICHT ALLES!
  - Inhalte spielerisch lernen: https://inf-schule.de/automaten-sprachen => NICHT ALLES!