

Homework Assignment 4

Due date: 2nd of December 2013

Please note that even though the homework assignments are optional, you're still highly encouraged to answer them, as they will help you prepare for your final exam. You can work in a group of two or alone. Solutions can be dropped off at the institute's homework mailbox located on the 2nd floor, next to room 238. In that case, please make sure both your name and matriculation number is noted down. If your answers span more than one sheet, kindly staple them together. Another alternative is to send your homework via email to: elmaarry@ifis.cs.tu-bs.de

LECTURE 5: LATENT SEMANTIC INDEXING

EXERCISE 5.1

What's the motivation for the Latent Semantic Indexing Model?

EXERCISE 5.2

Retrieval in a reduced space is superior to retrieval in the space of the entire index terms. How is this achieved through LSI?

EXERCISE 5.3

Applying Singular value decomposition decomposes the document-index matrix into three components. What do these three components semantically stand for? Explain in your own words what these components mean and signify in LSI. Avoid using formulas if possible.

EXERCISE 5.4

What happens in low rank approximation? Is it reasonable to apply within an information retrieval setup?