

WRITTEN ASSIGNMENT

Tasks for Course:

DLMBDSA02 – Analytical Software and Frameworks

CONTENT

1. Task.....	2
1.1 Task 1: On Premise vs Cloud Computing	2
1.2 Task 2: Data Processing for IoT	2
1.3 Task 3: Choosing a machine learning framework.....	2
2. Additional information for the evaluation of the written assignment	3
3. Tutorial Support	3

1. TASK

Please choose one of the topics listed below to write your assignment on.

The starting point for your term paper will be the course book, the contents of which will serve as the basis for an in-depth examination of one of the following questions. You are expected to research and cite from sources corresponding to your chosen topic.

Note on copyright and plagiarism:

Please take note that IU Internationale Hochschule GmbH holds the copyright to the examination tasks. We expressly object to the publication of tasks on third-party platforms. In the event of a violation, IU Internationale Hochschule is entitled to injunctive relief. We would like to point out that every submitted written assignment is checked using a plagiarism software. We therefore suggest not to share solutions under any circumstances, as this may give rise to the suspicion of plagiarism.

1.1 Task 1: On Premise vs Cloud Computing

One of the most fundamental decisions in building an analytics stack is to choose between an on-premise or a cloud-based solution. Choose a specific scenario (e.g. a manufacturer using machine learning to predict the next best production step in a smart factory) and choose whether an on-premise solution, or a private/public cloud approach should be taken for the analytics project. Consider the type and amount of data which needs to be transferred, flexibility and scaling options, data privacy, and data security issues as well as other relevant aspects.

Explain your assumption and design choices.

1.2 Task 2: Data Processing for IoT

The Internet-of-Things (IoT) will be one of the backbones of future smart factories and advanced cyber-physical systems. One of the cornerstones of the IoT is the collection and recording of a wide range of sensor data to be used in data-driven analytics approaches. Choose a specific setting (e.g. a steel mill casting steel, a factory assembling cars from components) and design a data storage system that captures relevant data in a dedicated data store. Explain which type, amount, and velocity of data will be captured, as well as specific requirements for processing sensor data.

Explain your assumptions and design choices.

1.3 Task 3: Choosing a machine learning framework

Choosing a machine learning framework for a production system has far-reaching consequences for the design of the overall system. In particular, in production systems where the focus is not on developing a single model and obtaining some insight from an analysis but on continuously using a machine learning approach to derive data-driven decisions, choosing the right framework is of exceptional importance.

Consider a specific scenario, for example, a large company uses machine learning to identify customers who are most likely to cancel their contract (customer churn) such as a phone company wishing to prevent customers from cancelling their mobile phone subscription. Taking into account the data and data storage systems as well as operational constraints, choose a machine learning framework for this task that can be used continuously in a production environment.

Explain your assumptions and design choices.

2. ADDITIONAL INFORMATION FOR THE EVALUATION OF THE WRITTEN ASSIGNMENT

When conceptualizing and writing the Written Assignment, the evaluation criteria and explanations given in the writing guidelines should be considered.

3. TUTORIAL SUPPORT

In this Written Assignment task, several support channels are open; as the student, it is your responsibility to select your preferred support channel. The tutor is available for technical consultations and for formal and general questions regarding the procedure for processing the Written Assignment. However, the tutor is not required to approve outlines or parts of texts and drafts. Independent preparation is part of the examination work and is included in the overall evaluation. However, general editing tips and instructions are given in order to help you get started with the Written Assignment.