

SSE 2024 Data Analysis and Mining

Assignment 1: Reflections on Big Data

Background

With the rapid advancement of information technology, big data has become an indispensable part of today's society. From social media feeds to e-commerce transactions, from sensor data collected by smart devices to administrative records in the public sector, big data is everywhere. It plays a crucial role in driving technological innovation, improving decision-making processes, optimizing business operations, and enhancing user experiences.

Assignment Objectives

- **Understand the concept and significance of big data:** Deepen your understanding of the characteristics of big data, such as volume, velocity, variety, and veracity, as well as its applications and impacts across different fields.
- **Critical Thinking:** Encourage students to develop critical thinking by evaluating the potential benefits and challenges of big data, such as privacy issues, data security, biases, and fairness.
- **Innovative Thinking and Application:** Contemplate potential new areas of application for big data and how it can be used to solve specific problems or improve existing conditions.

Assignment Requirements

- **Submission:**
 1. Word count: Content is limited to 4 pages and should really reflect your critical and innovative thinking about big data.
 2. Format requirements: Please use a standard report format, including a title, introduction, body, conclusion, and references.
 3. Submission format: Submit the assignment as a PDF file named *studentID_name_hw1.pdf*, where *the name should be in Chinese*.
 4. **Submission date:** 2024/3/23, 23:59:59.
 5. Note: Please submit to **Canvas** (<https://canvas.tongji.edu.cn/>).
- **Content Points:**
 1. **Introduction:** Introduce the basic concept of big data and its significance.
 2. **Body:** (1) Analyze the four fundamental characteristics of big data (volume, velocity, variety, veracity) and how these characteristics distinguish big data from traditional data sets. (2) Discuss the application of big data in at least two different fields (such as healthcare, financial services, smart city development, education, etc.) and evaluate their positive and negative impacts. (3) Critically analyze the challenges posed by big data, especially focusing on privacy, security, and ethical issues.
 3. **Conclusion:** Summarize your reflections on big data, including its future potential, the challenges it faces, and how these challenges could be overcome.
 4. **References:** Include at least 10 sources, which could be books, academic articles, official reports, or reliable online resources.

Evaluation Criteria:

- Depth and breadth of content.
- Display of critical and innovative thinking.
- Clarity of logic and argumentation.
- Correctness of format and citation.

Tips

1. When writing your assignment, consider that big data is not only a technological innovation but also touches on social, economic, and ethical dimensions. Your discourse may include considerations of these aspects.
2. Do not forget to proofread your work after completion to ensure accuracy of language and coherence of logic.

This assignment represents your first deep dive into understanding big data. We hope that through this opportunity, not only will you deepen your understanding of the technology and applications of big data, but you will also reflect on its societal impacts. We look forward to your insightful submissions!