

# SIT719 Security and Privacy Issues in Analytics

## Distinction/HD Task 9.1 Technical Review Article on Privacy Preserving Data Analytics

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### Overview

For more than two decades, the Internet and associated information technologies have driven unprecedented innovation, economic value, and access to social services. Many of these benefits are fueled by data about individuals that flow through a complex ecosystem. As a result, individuals may not be able to understand the potential consequences for their privacy as they interact with systems, products, and services. Organizations may not fully realize the consequences either. Failure to manage privacy risks can have direct adverse consequences at both the individual and societal levels, with follow-on effects on organizations' brands, bottom lines, and future prospects for growth. Finding ways to continue to derive benefits from data processing while simultaneously protecting individuals' privacy is challenging, and not well-suited to one-size-fits-all solutions (Source: NIST Privacy Framework, 2020).

In this *D/HD Task*, you have to review the literature, read existing surveys and technical articles, explore blogposts, news items and gather information to write a technical review article by your own in the area of "privacy preserving data analytics". Please see more details in Task description. Before attempting this task, please make sure you are already up to date with all ***Credit and Pass tasks and task 5.1 (D/HD)***.

### Task Description

#### Instructions:

Choose **one topic** from the given topics below. You can prefer any one of the topics based on your choice and preference. Write **minimum 3500 word review** (excluding tables (if any), figures (if any), equations (if any), and **references**) based on your selected topic. For your benefit, I have included some sections. But you are free to add/modify sections and subsections to make the review article more informative, organized and readable. If you want to achieve a D/HD grade, you have to demonstrate expert/superior learning outcomes in the area of security, privacy and analytics. Therefore, you have to write in such a way that it may target audiences who have domain knowledge and find your article interesting and insightful. Please see the judging criteria (rubric) at the end of this task sheet.

Choose any one of the below topics to submit this task.

## Topic 1:

### Privacy-preserving analytics for social network data: A survey on anonymization techniques

Sections you may include (but not limited to): Introduction, Privacy attacks using social network data, Challenges in anonymizing social network data, state-of-the-art techniques, commercial and open-source tools for privacy analytics (list and compare at least 8 of them), practical use-case/example case study, future trends, and conclusion.

Sample Reference:

1. [https://www.cs.sfu.ca/~jpei/publications/SocialNetworkAnonymization\\_survey.pdf](https://www.cs.sfu.ca/~jpei/publications/SocialNetworkAnonymization_survey.pdf) (published in 2008, so there is a scope to explore lots of new information that I will expect you will cover)

## Topic 2:

### Differential Privacy for real-world applications: past, present and future

Sections you may include (but not limited to): Introduction, Background of differential privacy, why DP over anonymization and encryption, Motivation of using DP for real-world applications, commercial and open-source tools for privacy analytics (list and compare at least 8 of them), DP for internet system, DP for Healthcare, DP for Energy System, DP for IoT, DP for transportation system, DP for smart farming, etc, future trends, and conclusion.

Sample Reference:

1. <https://arxiv.org/pdf/1812.02282.pdf>
2. [https://privacytools.seas.harvard.edu/files/privacytools/files/pedagogical-document-dp\\_new.pdf](https://privacytools.seas.harvard.edu/files/privacytools/files/pedagogical-document-dp_new.pdf)

Convert the report into a PDF document and check for plagiarism from the unit site of the CloudDeakin (under “assignments” of the “assessment” tab). Ensure that the similarity score is less than 20%. **Take a screenshot of the similarity score and attach at the end of the PDF and submit using OnTrack system.**

Criteria	Unsatisfactory – Beginning	Developing	Accomplished	Exemplary	Total
<b>Review Article Focus: Purpose/ Position Statement</b>	<b>0-7 points</b> Fails to clearly relate the review article topic or is not clearly defined and/or the article lacks focus throughout.	<b>8-11 points</b> The review is too broad in scope (outside of the title topic) and/or the review is somewhat unclear and needs to be developed further. Focal point is not consistently maintained throughout the article.	<b>12-15 points</b> The review article provides adequate direction with some degrees of interest for the reader. The article states the position, and maintains the focal point of the article for the most part.	<b>16-20 points</b> The article provides direction for the paper that is engaging and thought provoking. The article clearly and concisely states the position, and is consistently the focal point throughout the paper.	/20
<b>Literature review</b>	<b>0-15 points</b> Demonstrates a lack of understanding and inadequate literature of the topic. Review is superficial based on opinions and preferences rather than critical selection of existing literature.	<b>16-20 points</b> Demonstrates general understanding with limited critical literature related to the topic.	<b>21-24 points</b> Demonstrates good level of understanding with adequate literature review related to the topic. Good demonstration but could be further improved based on critical analyses of the existing literatures by providing expert opinion or	<b>25-30 points</b> Demonstrates superior level of understanding with adequate literature review related to the topic. Compares/contrasts perspectives, considers counter arguments or opposing positions, and draws original and thoughtful conclusions	/30

			comments with supportive logic and evidence.	with future implications based on the literature survey.	
<b>Organization</b>	<b>0-10 points</b>	<b>11-17 points</b>	<b>18-21 points</b>	<b>22-30 points</b>	/30
	Article lacks logical organization and impedes readers' comprehension of ideas. Central position is rarely evident from paragraph to paragraph and/or the paper is missing multiple required components.	Article is somewhat organized, although occasionally ideas from paragraph to paragraph may not flow well and/or connect to the central position or be clear as a whole. May be missing a required component and/or components may be less than complete.	Article is adequately organized. Ideas are arranged reasonably with a progression of thought from paragraph to paragraph connecting to the central position. Includes required components.	Article is effectively organized. Ideas are arranged logically, flow smoothly, with a strong progression of thought from paragraph to paragraph connecting to the central position. Includes all required components with supportive figures, tables, references, charts, equation, etc.	
<b>Writing Quality &amp; Adherence to Format Guidelines</b>	<b>0-6 points</b>	<b>7-11 points</b>	<b>12-15 points</b>	<b>16-20 points</b>	/20
	Article shows a below average/poor writing style lacking in elements of appropriate standard English. Frequent errors in spelling, grammar, punctuation, spelling, usage, and/or formatting.	Article shows an average and/or casual writing style using standard English. Some errors in spelling, grammar, punctuation, usage, and/or formatting.	Article shows above average writing style (can be considered good) and clarity in writing using standard English. Minor errors in grammar, punctuation, spelling, usage, and/or formatting.	Article is well written and clear and standard English characterized by elements of a strong writing style. Basically, free from grammar, punctuation, spelling, usage, or formatting errors.	

Rubric idea adopted from: Denise Kreiger, Instructional Design and Technology Services, SC&I, Rutgers University, 4/2014