

Privacy-Preservation Technologies in Information Systems, WS 21/22

Exercise Sheet 08.

Subject: “Scientific Paper & Disclosure Risks & k-Anonymity & Privacy-Models“

Task 1 - Excerpt: Scientific Paper

This task aims to give you an overview about scientific paper and publications as this task sheet and previous ones included tasks about reading papers.

Note: As this first task is an excerpt only, it is no relevant for the exam.

- a) Explain in your own words which steps must/should be taken to publish a scientific paper.
- b) How may different conferences differ in terms of quality? Explain!
- c) How can you find relevant scientific papers? Describe!

Task 2 - Disclosure Risks

- a) Name and explain the different disclosure risks. How do those risks differ?
- b) Have an overview of the following papers and summarize the findings.
 - Human presence detection
(<http://doi.org/10.1145/3404983.3409991>)
 - Power Consumption Measurements for Human Activity Recognition
(<https://www.mdpi.com/1424-8220/21/23/8036>)
- c) How are those papers related to the disclosure risks?
- d) Describe the term: **Inference attack**.

Task 3 - Privacy-Models

- a) Give a definition of Privacy-Models.
- b) Why might Privacy-Models be necessary? Explain!
- c) Name and describe the different types of Masking.
- d) Assign k-Anonymity to one of the described types.

Task 4 - k-Anonymity

Read the following paper on k-Anonymity or refer to the lecture slides (Slides Part 3, Chapter 3).

- a) Describe the steps to reach k-Anonymity.
- b) Describe attacks which can be processed on k-Anonymity-valid data sets.
- c) Transform the following table such that 3-Anonymity is reached. Which assumptions are missing and must be made to start the transformation?

Table. 1: Example of Dataset

Race	Birth	Gender	ZIP	Problem
Black	1965	m	0214*	short breath
Black	1965	m	0214*	chest pain
Black	1965	f	0213*	hypertension
Black	1965	f	0213*	hypertension
Black	1964	f	0213*	obesity
Black	1964	f	0213*	chest pain
White	1964	m	0213*	chest pain
White	1964	m	0213*	obesity
White	1964	m	0213*	short breath
White	1967	m	0213*	chest pain
White	1967	m	0213*	chest pain