

## Exam: FWP-3 Data Analysis and Data Mining (SS23)

### Exam Form

Exam form: **Research Paper**. This research paper is based a group project. Each group needs to submit one research paper. The maximum number of the pages for the paper depends on the number of students in the group. The **maximum number** is calculated as **number of the student  $\times$  15**. For example, if there are 3 students in the group, the maximum number of pages in the research paper will be 45 pages. There is no hard minimum number of pages requirements, but if it is less than **number of the student  $\times$  10**. There will be score deduction. That means, for a 3-student group, the strong suggested length of the research paper is 30–45 pages. You are doing the project alone, the length is between 10–15 pages.

### Submission Deadline

Deadline: **10.07.2023 23:59**. Submissions have to be done in iLearn.

Note that the research paper is the only submission content. Not the code, nor the system.

### Group Construction

**1-3 students as a group**. If more than 3, you need to talk to me personally to get the approval.

### One important thing that is very worth to note

As the research paper is an output, any **plagiarism** will result in fail for all the students in this group. The plagiarism should be kept **under 10%**. You are able to see this value after you submit the research paper.

### Structure and Requirements

Each group will write a Research Paper about a Recommender System. Detailed structure is as follows.

1. **Introduction:** Consider recommender system as one of the typical data analysis and data mining applications, write an Introduction of (1) big data, (2) big data architecture, (3) real-world recommender systems, (4) recommender system evaluation, (5) data analytics and healthcare. All the references in the 6 study materials need to be included.
2. **Related works:** how the existing recommender systems work, e.g. classification, purposes and algorithm designs, algorithm development, new algorithm for recommender system, you can also refer to study material 7.
3. **Motivation scenario:** design a scenario for recommender system, such as music recommender system, or movie recommender system, you can choose any scenario as you like but you need to reason that. Healthcare scenario is very welcome. Write a detailed description of why we need such a recommender system.
4. **System architecture and algorithm:** describe the system design and architecture, such as data models, datasets, algorithm selection, data flow, or any UML modelling design.
5. **Mock-up design:** describe the mock-up GUI design with snapshots and descriptions, with Figma, Balsamiq, Mockflow, Pencil Project, etc. **(Max. 5 pages)**

6. **Implementation:** describe the key code in the project. It is not required to have a complete system, if you have system in this section, you also can describe the key snapshots for the project. **(Max. 10 pages)**
7. **Discussion:** discuss the possible usage in the real market. Targeted user group, swot analysis, and discussions etc. Swot analysis has to be included.
8. **Conclusion:** write a summary for the project.
9. **Reference:** a list of references you have used in the paper. Use APA style for reference.
10. **Who did what:** write down who did what for this project. The grade will be given based on the individual work. If you are doing the project alone, you do not need to have this section.

### Research Paper output

1. Description of the data analytics, big data with the 6 study materials.
2. Description of recommender systems with study material 7.
3. Description of your selected motivation scenario.
4. Description of your system architecture with figures and related text.
5. Description of mock-up system design together with snapshot. It can be a web application, an app a stand-alone software as you prefer.
6. Discussion of the possible recommender system usage you designed.
7. Conclusion and Summary of the work.
8. Use APA style to cite all the 7 study materials, you can add other references if you like.
9. Because this is a research paper exam, any direct text copy (plagiarism) will lead to a fail in the exam, missing references will result in a fail in the exam.