

universität freiburg

Databases and Information Systems WS 25/26

Lecture 13: Evaluation, Exam, Work in our Group
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Overview of this lecture

■ Organizational

- Your experiences with ES 12
- Last lecture of this semester

Language models

Yay

■ Contents

- Official evaluation
- Info about the exam
- Work at our chair

results + discussion

when, where, how, what

how, projects, next courses

There is no new topic and no new exercise sheet this week

Experiences with ES 12 1/2

■ Excerpts from your feedback [TODO: how many did it?]

"As always, I loved the lecture"

"Appreciate the creative tasks, way more fun this way"

"In the end the sheet was easier than expected"

"Interesting sheet, but took a long time to get the prompt right"

"For the exercise sheets, a little more explanation of what is expected would have been helpful"

"First of all this was again a great exercise sheet. Secondly I can imagine that the results from this exercise might be great for exam preparation. But if you guys only host the models during this week, how can I use it later on?"

Experiences with ES 12 2/2

■ Hallucinate a poem about databases

There once was a hit for my query
Whose ranking was sadly so dreary
So I programmed an index
Did smart stuff with syntax
The result I got made me cheery!

Some come early, some arrive late,
Some skip the lectures, but still await
The grade, the proof, the final score
While others seek the tutor's door

...

Course Evaluation 1/9

■ Participants (this year: only DBIS, WS 23/24: DBIS and IR)

- Registered for the exam: **174** WS 23/24: 161
- Participated in the evaluation: **45** WS 23/24: 74
- Nominations for teaching award: **29** **thank you**
- Study program of the 45 participants:
38 x Computer Science, 6 x ESE, 1 x Physics
- In the following, a summary of your feedback
- You find **all** the details [linked on the course Wiki](#)

■ Style of the course

- **Learned** a lot:
WS 23/24 64% fully agree, 25% agree, 11% other
62% 24% 14%
- **Explained** well:
WS 23/24 71% fully agree, 22% agree, 7% other
78% 18% 4%
- **Level** of contents:
WS 23/24 46% appropriate, 46% high, 8% other
59% 36% 5%
- **Exercises**:
WS 23/24 62% very good, 24% good, 13% other
57% 33% 10%
- **Quality** overall:
WS 23/24 64% very good, 25% good, 11% other
67% 26% 7%

! Those who did the exercises gave better grades !

Course Evaluation 3/9

■ How much work was it?

- Effort relative to ECTS ... 1 = very high, 5 = very low

9% x 1 34% x 2 54% x 3 2% x 4 0% x 5 this time

8% x 1 45% x 2 45% x 3 2% x 4 0% x 5 WS 23/24

14% x 1 26% x 2 55% x 3 5% x 4 0% x 5 department average

As usual, we have tried to provide the "boring" parts of the code, as well as carefully curated data and unit tests, so that you can focus on the interesting stuff

(though I personally also like the "boring" part and I think it's very important to learn how to deal with it efficiently)

Course Evaluation 4/9

■ Materials and Service

- **Materials:** 64% very good, 31% good, 5% okay, 3% worse
dep avg: 27% 37% 22% 14%
- **Service:** 58% very good, 30% good, 7% okay, 5% worse
dep avg: 31% 34% 20% 15%

■ How did you follow the lecture

Mainly by attending live:	40%
Mainly via the recordings:	36%
Mix of recordings and presence:	20%
Mainly via course materials:	7%

Thank you very much to **Frank Dal-Ri** for technical support
and to **Alexander Monneret** for the video editing

■ Tutors and assistant

- The tutors for this course were all Ph.D. students or postdocs from my group

Patrick Brosi, Johannes Kalmbach, Sebastian Walter, Christoph Ullinger

- They did an excellent job and your feedback was very positive

A big thank you to the tutors for their effort + **please consider to give back and become a tutor yourself in the future**

- The assistant for this course was **Robin Textor-Falconi**

Robin helped with the technical setup, prepared the exercise sheets and the master solutions, moderated the tutor meetings, and answered questions on the forum ... **thank you, Robin**

■ Praise, excerpts

- Well structured, clear progression, "one topic per lecture"
- Well-designed exercise sheets with project-like results
- Very clear explanations, easy to follow, not overwhelming
- Engaging delivery (fun, dynamic, humorous; keeps attention)
- Strong mix of theory and practice (write you own engine)
- Live-coding praised as helpful and understandable
- Great materials & infrastructure (slides, code, recordings, ...)
- Feedback taken seriously; course continuously improved

■ Criticism / suggestions, excerpts [there wasn't a lot]

"The exercise sheets were too much work" [most frequent comment]

"The exercise sheets on web apps were too hard"

"I'd like to have more theoretical exercises along with practice"

"I would have liked more Databases and Information Systems at the end, instead of server and web applications"

"Maybe check for slide errors before the lecture"

"I am still convinced that it would dramatically improve the quality of the lectures if the lecturer were to wear a funny hat"

■ Planned specific improvements

- Have more theoretical exercises

We had more in the previous "Information Retrieval" course, but it's harder now because we touch so many different topics

- Make at least a fraction of the exercise sheets obligatory

Less than 10% doing the exercise sheets is not OK

I understood that some of you are just not submitting the sheets, but the majority is just skipping them altogether

We don't want half-assed or plagiarized exercise sheet

So we are thinking of a system, where you commit to, say, one fourth of the sheets (spread over the semester) and do these seriously (not just half-assed)

Course Evaluation 9/9

■ My feedback to you (as a whole group)

– What I liked

More people in the room than two years ago

Those of you who were here, were a very pleasant crowd, and it was fun to interact with you

– What I did not like

Dark matter of over 100 participants who we never saw or read

I know that you are all individuals, and not acting as one coordinated group

Still, it has an effect on us if 80% are constantly absent or do not seem to care → why should we care then?

Reciprocity is an important thing in a society

Exam 1/7

■ When, where, what to bring

- Date: **March 17** (Tuesday), **9:00 – 11:xx h**

Please be there 15 minutes early and plan for an exam duration of 2.5 hours, though it might only be 2 hours

- Rooms: **six rooms in building 101**

Who sits in which room will be announced in the forum

- Please also bring: student id, passport, pens in two colors

student id + passport: so that we can check that it's you

two colors: can improve readability of drawings etc.

But don't use **red** please, that's "our" color 🧐

■ What else you can bring to the exam

- You can bring **one DIN A4 page** with contents of your choice related to the lectures and the exercises

To help you remember some details

You can write on the front and on the back

It can be hand-written or a printout, but **the content must be created by yourself**, not by someone else

Electronic devices of any kind are obviously not allowed

- There will be a sub-forum for questions about the exam

Response times may be slower in the semester break

Don't ask all your questions in the night before the exam

■ Types of questions

- **Type 1:** Basic understanding → state a basic concept, a definition or an algorithm, or apply it for an example
- **Type 2:** Coding → implement a small function (in Python, typically 10 or 15 lines max)
- **Type 3:** Deeper understanding → small calculations or proofs, questions that require some thinking
- Given the many practical exercises this year, there will be more practical tasks in the exam than usual

The contents from the **exercises** is very relevant for the exam, too (and it will pay off if you have done the exercises)

- Don't just learn things schematically or by heart, but try to really **understand** the material ... see next slide

■ Preparation

- To check whether you really understood something:

Put away the material from the lecture and try to write it down or prove it **in your own words or formalism**

If you just learn the individual steps of a proof or argument by heart, you won't be able to apply it in a different setting

- Once the basic stuff from the lecture is understood, the best preparation is to do the exercise sheets and old exams

For the coding exercises, don't just code until the tests work, but understand what you are doing!

All our old exams are on the Wiki (so no need to go through secret channels or the Fachschaft database)

Exam 5/7

■ Tasks 3.1 from the WS 22/23 exam ... 8 points

You are given the term-doc matrix A below (3 terms, 5 docs)

1. Find a query q such that $q^T \cdot A$ gives the ranking $D_1 D_3 D_4 D_2 D_5$
2. Which docs should be relevant s.t. $P@R = 0.5$ and $P@4 = 0.25$
3. What's the average precision then

$$A = \begin{array}{ccccc} & D_1 & D_2 & D_3 & D_4 & D_5 \\ \begin{array}{c} 1 \\ 2 \\ 3 \end{array} & \begin{array}{c} 1 \\ 4 \\ 1 \end{array} & \begin{array}{c} 2 \\ 1 \\ 1 \end{array} & \begin{array}{c} 0 \\ 0 \\ 2 \end{array} & \begin{array}{c} 1 \\ 2 \\ 1 \end{array} & \begin{array}{c} 5 \\ 3 \\ 0 \end{array} \end{array}$$

■ Tasks 2.2 from the WS 23/24 exam ... 8 points

Compute the cost of each of these two query plans,
where **A** has shape 10×4 and **B** has shape 20×2
(the cost estimate functions are provided in the task description)

For which shape of **A** and **B** is plan 2 cheaper than plan 1?

Query plan 1

1. $A' = \text{select}(A, \Phi_1)$
2. $B' = \text{select}(B, \Phi_2)$
3. $C = \text{cart-prod}(A', B')$
4. $R = \text{project}(C', \text{all cols})$

Query plan 2

1. $C = \text{cart-prod}(A, B)$
2. $C' = \text{select}(C, \Phi_1)$
3. $C'' = \text{select}(C', \Phi_2)$
4. $R = \text{project}(C'', \text{all cols})$

- Task 2.2 from the WS 22/23 exam ... 5 points
 - Calculate the minimal possible edit distance between two strings of length 5 that have three 3-grams in common when using padding on both sides ... with explanation

and we have many
really interesting
and large **datasets**

■ How we work

- We solve **practically relevant** (non-trivial) problems

See topics on slide 24: search, knowledge graphs, natural language processing, geographical information systems, ...

- We make **software** that is useful + really used by people:

This requires an effort to write good software, good documentation, nice user interfaces, and so on ...

- We use **theory** mostly as a tool (but an essential one)

All our work has a solid theoretical underpinning, otherwise solving complex problems remains hacking and guesswork

All three aspects were part of this course, too ... except that for our research projects we use **git** and not **svn**



* the problems
do not necessarily
have to be super-hard;
more important are:
**usefulness, insight,
or esthetics**

■ Supervision

- Similarly as in the lecture:

Very good infrastructure and support, inspiring environment,
apart from that a lot of **freedom** in what and how you work

Freedom is a double-edged sword: for some it's great and
even a prerequisite, others prefer step-by-step instructions

- I think our group is a great fit for people who:
 - ... are happy when the end result is useful + used by people
 - ... like to solve problems* and **code and get stuff done**

See the various demos on slide 24 → if you are excited at
the thought of building something like this yourself, then you
will probably like working with us

■ Artificial Intelligence

- We are using **AI** in various places in our research, in particular for natural language processing tasks

See the demos in the end for some examples

- Not much AI and natural language processing in this basic course, but a lot in the **advanced course in the WS 26/27**

Latent semantic indexing, multinomial regression, large language models in depth, question answering, ...

- We also still do a lot of good old **algorithmics**

Fiddling around with complex neural networks and tuning them until they work is not always the greatest fun on earth

■ Artificial Intelligence

- Topics of the various groups we have in Freiburg:

Prof. Hutter Hyperparameter optimization, AutoML

Prof. Brox Computer Vision

Prof. Valada Robotics

Prof. Bödecker Neurorobotics

Prof. Kalweit AI and Medicine

Prof. Kamingsun Foundations of AI

Prof. Bast Natural Language Processing

- Selection of current projects and demos
 - World-wide public transit visualization (Travic) [demo](#)
 - **The** open-source RDF Database (QLever) [demo](#)
 - Visualization of larges geo results (Petrmaps) [demo](#)
 - A brand new user interface (QLever UI++) [demo](#)
 - Question Answering (GRASP) [demo](#)

■ Upcoming courses

- **Programmieren in C++** ... in the SS 2026

Basic course for **all** B.Sc. Student of the TF ... **tutors wanted!**

- **DBIS, advanced course** ... in the WS 26/27

Advanced knowledge graphs, compression, efficient list intersection ... and all the AI optics from slide 23

- **B.Sc. / M.Sc. projects or theses**

Offered all the time, read the instructions on our **Wiki** and then just ask (if no response, ask again please)

It helps if you showed commitment in one of our lectures