Advanced Database Systems Winter Semester

Week 1- Part One (Project Discussion)

Ahmad

Project

- The project forms 40% of your final marks.
- In this project you need to create a survey on a recent topic in Databases
- The project has two components:
  - A Presentation (15% of your mark)
  - A Report (25% of your mark)
- The aim of the project is to help you learn writing a survey.
- Surveys are created to keep the researchers updated with the recent development of technology.

Project Groups- 1

- Project is done in group of 4 students.
- You are responsible for forming groups and finding your group members.
  - This is an intensive semester of only 4 teaching weeks, so you need to form a group by the end of week 1.
  - You can do this in this tutorial or through the Ed discussion in Canvas.
  - Students from different tutorials can be in the same group.
  - You need to create a group with your group members in the People section of Canvas. Check the link below on how to create a group:
    - https://community.canvaslms.com/docs/DOC-10516-421264913

Project Groups- 2, Project Topics

- Choose a topic as a team from the list below:
  - **Crowdsourced and Collaborative Data Management** (In a nutshell: Databases where many people contribute to the data and workings of the system)
  - **Self-driving Databases** (In a nutshell: Databases that take over functions from the Database administrators such as tuning, index selection, improve performance, etc.)
- You need to submit you group information by **end of week 1 (July 2, 2023 11:59pm)**.
  - **You can submit in Canvas->Assignments->A. Group topic submission.**
  - Only one member needs to submit the group information. Group information has:
    - Group ID (This is assigned to you after joining a group in People section of Canvas)
    - Name and Student ID of the group members.
    - Topic of the project. If the topic changes, you may resubmit, no later than the deadline.

Project Groups- 3, Getting into the Business

- Start Familiarizing yourself with the literature. You can begin with less formal articles Wikipedia, newspaper/magazine, and similar articles/webpages to get a high-level idea about your chosen topic.
- After this initial phase, you should use scholar.google.com or similar scholarly search engines for performing a more detailed background search and do further reading. At the end of this phase, you should know important keywords by which you can do a more focused search.
- You can also explore the list of accepted papers of the top venues (listed below) for finding related papers.
  - Top Venues: SIGMOD, VLDB, ICDE, SIGKDD, SIGIR, SIGSPATIAL, ICDM, TKDE, VLDBJ, ACM TODS
  - For finding this list, search for “Venue name + accepted papers + year”
  - For finding the list of the accepted papers of a journal, go to journal page.

Project Groups 4- Group Dynamics

- The main concept in group dynamics is fairness. You should be able to evenly distribute the work among team members.
- This semester is a short semester. So you need to be in contact with your team members constantly, plan and act.
- Pick a communication channel (like Microsoft Teams), set a group leader for each week, set milestones for each week, assign measurable tasks to each member and review your progress at the end of each week.
- Group reflection and Individual reflection in the report:
  - It is also important how you do your project, and what is the contribution of each member. This should be reported in your final report submission.
    - In a page you should explain how you found and chose your references and other learnings.
    - Each student should explain in 200 words what was their contribution (marked independently).

Time to Find your Team-mates

- We allocate 10 minutes of this tutorial to group formation.
- If you have not teamed-up before, use this time to approach other students and form groups.
- If you found your team-mates (or already have), please claim a breakout room (please post in the chat the breakout room number), and then everyone from your team can join the breakout room.
- Then you can use this time to talk about your topic, and join a group in Canvas.
- The project spec file from Canvas can help you a lot.

How to choose the right papers?

- Start with an initial set of keywords.
- Surveys can help a lot in understanding the topic, but do not use them as your main source. They can also stand as a good example.
- Search scholar, or the list of accepted papers to find titles that include your keywords.
- Read abstract and judge whether it is suitable to your topic.
- Ideally, you should read around 60 abstracts, skim around 35 of them and read and report around 20 of them. Only list the top papers.
- Use the authors as a way of finding your papers.

Report Rationale

- It is important that the report is not only about listing the top papers, but you should be able to categorise the developments/ approaches and compare and critique them.
  - Comparison, and critical analysis is at the core of the survey.
  - You are not expected to learn every paper in detail perfectly comprehensive about the topic.
    - Instead, you should cover key directions/ideas and be able to classify them.
- The sections of your presentation/report should show that you know the categorization of works in your topic of choice.

Report Structure

- Identification info for students/title/abstract/etc (1 cover page)
- Introduction to the Topic Area (1 page)
- Related Work Details (papers covered explained in brief in some structured manner, categorisation, how a paper extended an approach from a previous paper, etc.) (6 pages)
- Comparison of Key Approaches/Papers (benefits and disadvantages from various aspects, when some approach is more applicable than other, etc.) (2 pages) [Note: This part can be presented combinedly with related work]
- - Conclusions/Discussions and Future Directions (1.5 pages)
- - Group reflection (0.5 page) [details below]
- - Individual reflection (maximum 200 words per student in the group) [details below]
- - References (1 page)

Presentation Rationale and Structure

- Presentation is done as a team via zoom.
- You do not need to include group and individual reflections into the presentation.
- You will have no more than 25 mins to complete your presentation.
- Better to follow the report structure in the presentation as well.
- We recommend 14-18 slides for the presentation.
- The presentation file needs to be submitted to Canvas->Assignment->B before your presentation.

Presentations: Three Most Important Things

- Organization
- Visual Aids
- Delivery and Style

Be clear on: the Purpose & your Audience

- Be clear about purpose of your talk
  - What do you want your audience to learn?
- Audience analysis
  - Identify your audience and their understanding of the area

Introduction

- Earn the audience's attention
- Roadmap
  - Explain where you plan to go, set up the story
  - Create a table or figure to organize the area
- "Don'ts"
  - Apologize for being nervous
  - Read the introduction or in general any slide
- Remember: Keep it very simple for the introduction
  - No excessive use of technical abbreviations etc

Body of Your Presentation

- Create main points, do not form full sentences
- Presentation & Language
  - Present points as declarative statements
  - Keep speech points unified, coherent, and balanced
  - Verbalize connections between points
  - Do not form full sentences or paragraphs
  - Do not spend time on code or formulas unless it is a must, and even then only a few lines at a time in a slide
  - Any symbols used must be defined and do not use more than a few in any single slide if possible

Some Formatting Issues: Fonts Are Important

- Use sans serif fonts
- Use readable font sizes
- Use appropriate color combinations

40 point Title

28 point Heading/Body

24-20 point Sub-headings

Anything smaller is too small

How about this colorful slide?

- Use sans serif fonts
- Use readable font sizes
- Use appropriate color combinations

Visual Aids Do’s and Don’ts

Do’s

- Design them large enough
- Design them to be simple
- Design them to be clear
- Label them
- Use only what you need

Don’ts

- Use too much text
- Use excessive artwork
- Make things look cramped
- Use too many colors
- Overuse capital letters

Transitions

- A word or phrase that signals when a speaker is moving from a topic or handing over to the next presenter
- Two parts to a transition
  - Idea that the speaker is leaving [**the review part**]
  - Idea that the speaker is coming up to [**the preview part**]
- Example
  - Now that you have seen a general overview of XYZ [**review**], I will discuss each of them in turn [**preview**]
- Use a **map** to remind people which part of a presentation or area in a survey you are coming from and going to…
- This is critical for team presentations

Discussion/Conclusion Part

- Purpose: Tell them what you told them
  - Use a slide or two for comparing approaches
    - Use figures, tables, charts
  - Offers the audience a sense of closure
- Further Tips
  - Signal the end verbally and non-verbally if you can
  - Make conclusions strong and brief
- Don’ts
  - Drag out the conclusion
  - End on a weak or rambling note
  - Introduce new points that were not mentioned before

Some Side Tips

- Use of capital letters/special fonts: Many people use too much of these:
  - Bullet points typically have one capital letter at the beginning
  - Just because **You** think a **Word** is **Important** does **NOT** *mean you should* **Emphasize** things all the time as it becomes ***hard to read!***
  - ALL CAPITAL LETTERS MAKES IT HARD FOR YOUR AUDIENCE TO READ AS WELL!
  - Exclamations: Don't use it too much as well!!!!!!!!!!!!!!

Practicing

- It is the most important aspect of a presentation
- Very critical for team presentations
- You will find out if you
  - Make sense and sound knowledgeable
- How to practice
  - Highlight in your notes difficult pronunciations
  - Practice in a setting similar to how you will present
  - Imagine the audience to whom you will present
  - Always practice out loud and as a team as well

Last But Not Least: Establishing Credibility

- Make sure you know your work
- Nothing replaces knowledge, no fonts, no colors, etc
- Speak loud and confident enough
- Look at the audience
- Don’t assume your audience knows though
  - Watch for audience’s non-verbal feedback
  - Adjust your rate, content, or eye contact for them

After the Presentation: Handling Questions and Answers

- Decide who will answer which types of questions and when
- Use welcoming body language
- Reword the question before answering for all to hear if need be
- Say “I don’t know” if you do not know

Some Further Teamwork Considerations

- Work out all transitions clearly
  - Between sections
  - Between team members
  - Try to map between these carefully
- Practice as a team multiple times and more than you would do otherwise
- Speak with one at a time
- Give the speaking member full attention yourself as well
  - If you look distracted it will make your audience distracted

Reports

- A good presentation design → A good report
  - Even if you do not perform well in a presentation, the preparation helps with the report
- Structure is pretty much the same for the presentations as well as the report
- Figures should be reused so they are not wasted
- Audience considerations directly translate
- Many issues such as Introduction being simple directly applies

Format/Structure of a Report

- Please do not deviate from what the Project Specs say
- These are given with a proper real-life report in mind

Details on Related Work/Analysis

- Background and critical analysis:
  - Background cannot be a simple list of papers
    - This is the most important issue with bad surveys
  - Organize into subcategories/sections
  - There is always a higher learning level you can give to the audience/readers (same with the presentations)
  - Figure out parameters that matter for comparison
  - Create a table of comparison (or two)

An Example Comparison Table

Table 2 Comparison of MkNN techniques

Technique	Continuous	Incremental	Local access	Unknown path	Order-sensitive
SR-kNN [25]	×	✓	✓	✓	✓
kVD [20]	✓	×	×	✓	×
Ordered kVD [20]	✓	×	×	✓	✓
TPkNN [27]	✓	×	✓	×	×
CkNN [29]	✓	×	✓	×	×
RIS-kNN [33]	✓	×	✓	✓	×
IRU [17]	✓	✓	×	✓	✓
V*-kNN	✓	✓	✓	✓	✓

Wrapping It Up

- Conclusions and future directions
  - Do not underestimate yourself, be innovative
  - Do not repeat the Introduction
- References and sources
  - You should cite extensively for a survey but exclude papers with incremental contributions
    - Use: citation counts, source of the paper, author reputations, etc.
    - Do not cite papers that you have not read for the survey
  - Citations should be done professionally
    - Follow ACM Computing Survey style for the formatting for example

Take a Break (10 Minutes)

- Take a break for 10 minutes.
- Deep breath and some stretches would help.