CMPT 606 Advanced Database - Fall 2019

Review paper, presentation and discussion leading

The review paper and presentation must be submitted to your assigned QU Cloud Folder by midnight Sunday 8 December 2019

You need to write a **literature review paper** to survey recent research papers related to your selected topic and presented in major Database conferences and journals. Then you will **present and discuss** your findings in class using effective presentation techniques.
Each presentation will be given 10 minutes per team member and 10 minutes questions and answers. The paper and presentation must be the students original work. The written paper should be 10 to 12 pages (typewritten, 12 point Times Roman font). The key objective of this assignment is that you gain experience researching an advanced topic by gathering **multiple authoritative** academic sources and integrating your findings **into a well-structured paper and presentation** with the highest possible academic standards. In addition to learning about advanced database topics, this assignment will also give you the opportunity to practice important research skills:

- You will gain experience reading and critically evaluating research papers.
- You will practice communicating complex technical material, both orally and in writing.

Submitted review papers and presentations will be made available to all students. This will enable everyone to learn from the efforts of all the other students.

1. Possible Topics

Paper and presentation topics must be specific enough. Students are encouraged to focus on topics that complement the material covered in the course, but you need to go significantly deeper.

Each team is required to select at least **9 academic papers** (or you may choose 6 large papers > 15 pages) relevant to their topic, summarize, synthesize and analyze them and present them to the class. The students will present their review paper as per the schedule to be advertised.

Topics for presentation can be chosen from any recent (within the last five years) database publications from leading conferences and journals such as:

- Very Large Data Bases (VLDB) Conference
- SIGMOD : ACM SIGMOD International Conference on Management of Data
- International Conference on Data Engineering (ICDE)
- VLDB Journal
- Distributed and Parallel Databases

Suggested topics:

- Distributed Transactions for Partitioned Database Systems
- NewSQL Databases: Comparison and Experimental Evaluation
- Stream Processing
- Data Management for Microservices
- Scalability Strategies in NoSQL and NewSQL Databases
- Time Series Data Management for Sensor Networks and IoT
- Data Management for Spatiotemporal Moving Object Trajectories
- Consensus Algorithms for Distributed Database Systems
- In-Memory Database Management Systems
- Other topics related to advanced database

2. Guidelines for structuring your review paper

The structure of your research paper will vary based on the selected topic. This section gives some rough guidance on how you could structure your literature review paper but seek further feedback during the office hours.

- Abstract
- Introduction: describe the research problem(s) being addressed by the research papers you have reviewed. Discuss the importance (motivation!) of the problem. What are the challenges posed by the problem?

  The worst thing is to jump into details without letting the reader know why they should bother.
- Background: describe key related concepts and background necessary to understand the problem.
- Research method: approaches, formalism, experiments used.
- Solution(s): How is it solved? Architecture, concepts, algorithms and solutions to address the identified problems. Illustrate key technical points (examples are a great way to do this.)

  Focus on relevant database-related technical details particularly related -if applicable- to ACID, Scalability, High Availability and Consistency. If applicable, focus more on **HOW** ACID, Scalability, High Availability, and Consistency are achieved. Have a separate subsection for each.

  Keep in mind that a running examples are always a great way to convey a complicated idea.
- Evaluation of the proposed solution(s): present how the reviewed papers evaluated their contributions and include a summary of key evaluation results and the discussion of strengths (things you appreciated) and limitations of the presented approaches (things you believe can be improved).
- Discussions: your own views and thoughts: e.g., is the paper(s) technically sound and why? Explain how the concepts in the reviewed papers advance the state of the art. New insights of the paper findings / contributions.
- Future Work: remaining or new questions/problems to be solved.
- Conclusions you draw from the results and paper findings. Conclusion should be justified and logically sound including summary of findings / contributions and/or new insights of the papers.
- Bibliography

3. Grading schema

Beside the above guidelines, this is what I will focus on during grading:

- Depth of literature review and adequate level of detail***. The more in-depth and specific the better***. Avoid vague generalities.
- Emphasis database related issues. Referring to concepts or points made in our course content is a plus.
- Paper and presentation organization, i.e., logical order and transitions. Topics are introduced in an order that flows naturally. Figures are good!
- Clear, concise and accurate writing. No hand-waving - be precise.
- Do not plagiarize. Quote and cite sources used. Explain what you understood in your own words.
- Evaluation (e.g., compare and discuss advantages and limitations of presented approaches). Be critical!
- Conclusion justified and logically sound.
- Well Prepared presentation and high level of confidence during the presentation delivery
- Quality of PowerPoint slides.

- **Presenting NOT reading** – student just reading their presentation will have lower grade
- Time management during the presentation.
- Adequately answering the questions during/after the presentation.

What should you submit?

You should submit to your assigned QU Cloud Folder:

- PDF copy of the reviewed papers
- Your review paper as a Word document
- Your PowerPoint presentation

On the day of the presentation, you should also submit a hardcopy of your review paper and a hardcopy of your presentation.

How to locate academic papers?

- Google Scholar http://scholar.google.com/ - it works best if you use within QU campus because you can go straight to the full text via QU library.
- QU Library Online Databases http://library.qu.edu.qa/ (then select E-Resources) Email me if need any further guidance or help.

Useful links

- Tips for Writing Technical Papers and Tips for a Good Conference Talk by Prof. Jennifer Widom

Evaluation Criteria

Evaluation criteria	%
Depth of literature review and adequate level of detail: The more in-depth and specific the better. Clear, concise and accurate reporting of findings/ contributions and/or new insights of the reviewed papers. Emphasis on database related issues. 1. Abstract (4pts) 2. Introduction (4pts) 3. Background (4pts) 4. Research method (6pts) 5. Solution(s) (25pts) 6. Evaluation of the proposed solution(s) (10pts) 7. Discussions (10pts) 8. Future Work (3pts) 9. Conclusion (4pts)	70
Writing quality and organization of the review paper: - Well-structured: each section has a clear and unique function. Hierarchy of sections is correct. Ordering of sections is logical. - Appropriate writing style, grammar, spelling and **proper citation of references**. - Level of detail is appropriate throughout. - Appropriate and correct use of technical terms. - All figures, equations, graphs, charts, and drawings are accurate, numbered with a title, consistent with the text, and of good quality. They enhance understanding of the text.	10

Presentation Content: - Presentation provides pertinent, concise and clearly explained information - Material is covered with adequate depth - Including a working demo of presented solutions is a big plus	6
Presentation Organization (i.e., logical order and transitions) - Presentation well-organized and clearly structured: information presented in logical and interesting sequence that the audience can easily follow. - Good quality and neat visual aids with good use of graphics.	6
Presentation Delivery: - Relaxed and lively though understandable and engaging talk with high level of confidence and enthusiasm. - Speaks clearly and uses appropriate language such that it keeps audience's attention - Presenter added value to slides (as opposed to merely reading them) - Meets time limit (30 minutes). - Adequately answering the questions: student is able to give appropriate, clear and to-the-point answers to the questions.	8
Total	100

This document is a draft and further details will be provided via email, discussions and updates to this document.