Detailed Project Description

COMP90020 Term Project

The project assessment for COMP90020 is all about giving choices to students in their learning experience. As stated in the subject information page, Distributed Algorithms includes a term project to be conducted by each student being part of a **4-student team**. For the project, each team will choose and read a small set of papers that are on an original (set of) distributed algorithm(s). The team will then prepare an application demo and a report on this topic. The demo will form 15% of your final mark and the report will form 25% of your final mark.

The stages of your project can be summarized as: background search, reading selected papers, report drafting and implementation, implementation and demo preparation, finishing your report. You are welcome to seek help from the lecturers during your progress about any problems that you may face.

Report

The report will be on a topic for a (set of) algorithm(s) in the area of distributed algorithms. You will need to give a survey of papers from this topic and then give comparisons of different approaches presented in these papers. Some comparisons already exist for various topics and it is acceptable to use these existing surveys for your report but the report has to be **in your own words** and is expected to be a critique from your point of view and more up-to-date than these existing surveys. In general, reports cannot be a simple re-iteration and a list of existing papers but have to be organized in an innovative manner that helps the reader understand the different categories of approaches in the topic. Reports should also contain possible application areas of the algorithm(s) as well as the details of the demo implementation.

The report will be a **20 page report**, on A4 paper, using 12 point Times New Roman font (for the main text), and should be single-spaced, single column, with 1 inch margins. It should include all the figures, references, etc. within the 20 page limit. The main text cannot be less than 5000 words. The report style and structure should be comparable to a published paper. Please use *scholar.google.com* for performing your background search as well as the book. Other publication databases such as DBLP, etc are also welcome. You may read Wikipedia but this cannot serve as a source of scientific research. You need to read the research papers cited on a Wikipedia entry.

The following structure for your report is also advised but not enforced:

Title + Author Information + Abstract + Keywords + Introduction Section (2 pages)

Background Survey (4 pages)

Comparative Analysis (3 pages)

Discussions and Future Directions and Application Domains (3 pages)

Details of the discussed algorithm, its advantages and disadvantages, its implementation details (but no code explanations) (7 pages)

References (1 page) (Approximately 10 papers are acceptable).

The deadline of the report is **June 05 at 11:59pm**. The report should be submitted via the LMS in PDF format . The detailed instructions will be on the submission page.

Application Demo

Implementations of application demos can be done at the University computing labs or on your own devices. The demos will be performed at the end of the semester during the lecture+tutorial in Week 11 (25/05 - 29/05).

Implementation details are the choice of the students. The purpose of the demo is to demonstrate that you have implemented the chosen algorithm(s) in a realistic setting. The setting could be of the nature of a multi-player computer game where different users can provide independent input. However, you are free to choose whatever you like for your application scenario. For example, you could be demonstrating things such as deadlock resolution or event ordering if you chose one of these topics. The graphics of the application is not the focus of the implementation although good graphics always help with presentations. The main focus of the implementations is the experiment with the chosen algorithm(s). Some part of the implementation, such as graphics components, can use libraries built by companies but the chosen algorithm(s) should be done solely by the efforts of the team. Teams should consider topics they like and have a feeling about what they will show in the demo.

Video Presentations and Demos

The video presentations and demos will run during the lecture hours on **May 29 and your tutorials from 25 May to 29 May** respectively. The project (source code) should also be submitted as a zip file that contains the demo code via the LMS. The project submission deadline is **May 22 at 11:59pm**. Code submissions are expected to have a readme.txt file to explain the details of the code structure.

For the video presentations (Week 11 lecture), students will showcase their chosen application and algorithm implementation via a video. The video should be no longer than 3 minutes.

The live demos will run on the tutorial times. They can contain a few slides as an intro (not more than 3) prepared using an electronic presentation environment such as PowerPoint. Then your live demo will follow. You are expected to show a working system with the algorithm(s) picked in it. You are expected to highlight where and when the algorithms play a role. It is also preferable if you can show one case in which not using the algorithm will cause a problem. Demos should last no longer than 10 minutes.

Topic Selection and Team Forming

Students should contemplate picking a topic early in the semester. A quick search on Google and a quick look at the textbook will give an idea about the topic. Students are encouraged to discuss possible topics with the lecturer. At the start of the semester, students are not expected to know the details of their topics, but they should have an interest in studying it.

The project's topic needs to be approved by the lecturer and the deadline to pick a topic is the **10 of April**. Each team will send an email to the lecturer about their topic for approval. Topics can overlap between teams as long as the reports and implementations are unique and all are approved by the lecturer.

Once the lecturer has approved your topic, you must send an email to the head tutor listing the topic, the related team member IDs, and emails. This also needs to be finalized by **Friday 10 of April.**

Students are required to form teams of 4. You can use the lecture breaks, the tutorials, or the LMS discussion forum to find team members. If you are struggling to find a team, please email the head tutor and we will assign you to a group.

A list of distributed algorithms (not an exhaustive list) is on Wikipedia (https://en.wikipedia.org/wiki/Category:Distributed_algorithms) .

Online Project Support

Students that cannot be on campus will be supported to successfully complete their project. We will assist you in creating teams if you choose to (you can choose your own team as well), we will facilitate online discussion groups with your team members via Canvas, and we will do the tutorial live demos via Zoom.