CompSci 230: Research Term Paper Specification

Due March 15th, 2019, in pdf format on CANVAS

1 General guidelines

This bibliographical research project will contribute 40% to your final grade. The goal of this exercise is to generate a survey of some research topic within the scope of the class. It will be submitted as a survey paper written in a manner that anyone taking the class can read and understand. Think of it as a formal peer-review technical survey paper.

- There are 5 sections that will be evaluated:

  1. *Field of study:* Introduces the area of chosen as the target of the survey. Emphasis should be placed in identifying the distributed [computing] system aspects that place this field within the scope of the class.

  2. *Challenges/problems in the field:* Introduces some of the important challenges/problems encountered in the field clearly identifying the essential and basic technical challenges related to distributed systems.

  3. *Important existing solution(s):* Describes existing approaches to the solutions outlined in the previous point.

  4. *Assessment of the State-of-the-Art:* Discusses the current state of affairs in the field and provides a critical assessment of the most advanced solutions to the important problems in the field.

  5. *Open problems and future research:* Identifies current open problems in the field and proposes a ranked order of importance of the open problems. Solutions to these challenges/problems should constitute enabling technologies whose novel development would open up further advancement in the field.

  You paper must also include a short abstract and a list of references.

2 Suggested Topics

You can choose any topic related to distributed systems; including topics related to systems, applications, algorithms, performance evaluation, network and distributed computing, among many others. Some suggested topics:

- Study the distributed solution for a particular application, algorithm, or system software.

- Implementation, performance evaluation, and analysis of algorithms for some computation/application.
- Experimental performance measurement for a comparative study of algorithms for some computation/application.
- Survey of available public domain distributed software for some chosen computation/application, and experimental comparison.
- Study and analysis of some distributed cluster machines and architectures (Exascale computers).
- Study and analysis of some programming models that facilitate the development of distributed applications. Some examples are Intel TBB, Cilk, OpenMP, MPI, OpenACC, CUDA, etc.

Examples of specific topics will be discussed in class. Once you have chosen a topic, you have to email a one-page project proposal that contains a short description of your topic and a list of references to Prof. Scherson (isaac@ics.uci.edu) by **February 8th, 2019**.

The proposal will serve as a starting point for the definition of your topic to make sure it is a feasible project within the quarter's time limitations.

These projects can be worked out in groups of three persons and a final joint report is expected via CANVAS and submitted by **March 15th, 2019**.