CS412: Algorithms: Design and Analysis: Project

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Fall 2020

Project

Project is an integral part for the CS412 course and it weighs at 15% of the total grade. You're supposed to work on your projects in groups of at least 3. You need to choose your partners yourself.

Scope of the project

Each group has to choose a computational (or mathematical) problem for which you can find at least two/three different algorithms (depending on the cardinality of your group). You need to compare those algorithms for their design techniques, theoretical computational complexity, implement them in the same language, test the implementations on the same machine, and compare their time complexity empirically.

Deliverables and grading

Week 13	Project ideas with list of name of team members due	2%
Week 15	Project presentation (demo) due (max $10 + 2$ minutes)	8%
Week 15	Project report due	5%

Some possible project ideas

Following are some of the computational problems which you could use for your projects. Most of these problems can be solved using many different algorithms therefore multiple teams (groups) can choose a same project provided they choose at least one different algorithm.

- Shortest path problem

- Minimum spanning tree problem

- String matching problem

- Traveling salesperson problem

- Matrix multiplication problem

- Pairwise sequence matching problem

- Maximum flow in a flow network problem