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EE6094 CAD for VLSI Design
Final Project Check Point III (Due: 23:59:59, 2023/06/21)

Introduction

The final project of this course is attending 2023 CAD Contest and complete one of the problems in the contest. You are asked to form a group of four students. All the problems in the contest come from EDA industry and are not easy to solve. Therefore, we set up several check points to support you for successfully completing the final project. You need to submit required slides/videos/reports/… for each check point. You also need to register for the contest and complete alpha submission. The final project score will base on the grading of each check point.

The 2023 CAD Contest are in two parts: International Contest and Domestic Contest. Based on the contest requirement, only 1st year graduate students and undergraduate students can participate Domestic Contest. Moreover, each team in Domestic Contest MUST include at least one undergraduate student. For more details, please refer contest website:

International contest: http://iccad-contest.org/

Domestic contest: http://iccad-contest.org/tw/

The schedule of each check point is shown below:

Check Point I: 2023/03/30 Problem reading and decision

Check Point II: 2023/04/30 Basic algorithm proposal

Check Point III: 2023/06/21 Final Project Due (Include Alpha submission)

Background

The CAD Contest at ICCAD is a challenging, multi-month, research and development competition, focusing on advanced, real-world problems in the field of Electronic Design Automation (EDA). It is open to multi-person teams world-wide. Each year the organizing committee announce three challenging problems in different topic areas provided by industrial companies. Contestants can participate in one or more problems. The prizes will be awarded at an ICCAD special session dedicated to this contest.

Since its inaugural year of 2012, the CAD Contest at ICCAD has been attracting more than a hundred teams per year, fostering productive industry-academia collaborations, and leading to hundreds of publications in top-tier conferences and journals. The contest undoubtedly boosts EDA research and keeps enhancing its impact.

Requirements of Check Point III

At this point, you should already have a solid understanding of your chosen topic and read related papers. By reading papers related to each topic, you should know how previous researchers have solved similar problems and come up with a framework of ideas on how to solve current problems. You should already think about how to realize your idea with programming with appropriate data structures and algorithms. You should also implement your idea and have initial results with the testcases provided by the problem chair. Moreover, you should submit alpha version of your implementation to the CAD Contest 2023.

Here is a suggestion for you on how to refine your approach. First of all, you can read more papers related to your method, and improve your own method by comparing and learning the advantages of other papers. Second, you can make improvements to the program implementation of your method, optimizing the program to both improve the solution quality and reduce runtime. You can try to implement different methods and carefully analyze results from public testcases, and finally find the method with the best results. In this checkpoint, you are asked to compare the algorithm/data structure used at Final Project Check Point II (Due on 4/30) with the method used at the final version you upload to ee-class (Due on 6/21), and write a detailed report which includes detailed description of your final method and experimental results.

At this check point, you are asked to summarize your entire final project by showing the algorithm you use, the methods of implementation, the results of your solution, and the proof of alpha submission. **Specifically, you need to provide (1) Slides, (2) Presentation Video, (3) A report, (4) The final version of your source code, and (5) The screenshot showing that you have successfully completed your alpha version submission.** In the slideshow and video recording section, please compare the differences between the method at the time of Check Point II and the final version. You need to explain its data structure, method and result improvement. Numerical analysis with different methods on each testcases is encouraged. **The videos should be less than 20 minutes** and you need to explain as clearly as possible. At a minimum, your slides and video should include: (1) Problem title and team member information, (2) Short problem statement (just one page for viewers to revisit the question, highlight the difference if the problem is revised by topic chairs), (3) final version algorithm / implementation improvement (you can use flowcharts, pseudocode and/or examples; please highlight improvements/modifications you made), (4) your code explanation (due to the time limitation, only high abstraction level is good enough), (5) final result comparison, (6) conclusions, and (7) Alpha submission screenshot,. Please also write a written report based on your final method, which should include (1) purpose of the problem, (2) your algorithm, (3) program structure and how to execute your program, (4) results of your algorithm with public testcases, and (5) conclusions and suggestions. Note that it is not required to write your report in English. Please also submit a fully working source code of your program.

Upload your video (in .mp4 format), slides (in .pptx format), report (in .pdf format), and code (packaged in .tar.gz format) to ee-class. Name your file as teamID_leaderstudID_Final_Report_III.mp4, teamID_leaderstudID_Final_Report_III.pptx, teamID_leaderstudID_Final_Report_III.pdf, teamID_leaderstudID_Final_Report_III.zip. Note that the maximum allowed size for uploaded files is 500MB for ee-class, and you have to make sure that your file will not exceed the limit.

Grading

Your slides and video will be graduated according to (1) the structure and content of your slides, (2) the clarity of your explanation, (3) the quality of your idea, (4) the suitability of your data structures and function/object definitions based on your idea, (5) the results, (6) the smoothness of the recording video, and (7) the screenshot of successfully submitting alpha test.

Your report will be judged according to (1) the structure of the report, (2) the clarity of your descriptions, (3) the presentation/description method of your algorithm/program, (4) the results and your thought about this project. I suggest you to provide enough details in your report if you want to obtain high scores.

Your source code source will be judged according to (1) readability and (2) correctness.

Contact

For all questions about Final Project, please send E-mail to TA 劉致瑋 (luke871228@gmail.com)