Project Milestone 3

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1 Progress Report

I have made decent progress this semester. I have followed up with my advisor again, but he has not responded. I understand that he has a busy semester and it might be a little awkward, but I will try to meet him during his office hours to determine next steps.

On my own, I have been running tests on changing the c_b variable systematically. Although my computer is not very powerful, I have began to confirm so introductory results on decently small test cases. However, I am starting to have a little trouble thinking about how to systematically test the runtime of the programs without bias from running other programs at the same time and other resource dependent aspects of the speed of the tests. One way I have thought about testing this is to just run using a virtual machine, though I have no idea how reliable this is.

For this part of the project, I would value my mentor's advice on how I can test the timing, as he has run SAT competitions before.

I have started outlining some introductory data types which I can use for testing. For instance, I have an idea of some API I can use to test including just the simple clock_t type from the time.h header. I have began coding such a structure up, but am still slow in making progress.

From my manual trials, it seems to confirm the hypotheses the original authors have found in their ProbSAT paper. While sometimes these may reach convergence, on larger test cases, the program sometimes gets confused about whether it is unsatisfiable or whether it just hasn't found a solution. To this end, perhaps allowing for restarts at specific times may cause the SAT solver to perform better.

2 Reflection on Initial Plan

Major Changes:

So far, no major changes have been made to my research plan. I intend to still study ProbSAT, and to modify YalSAT in order to improve performance of the stochastic local search solver. The restarts that I have manually tested seem quite effective, and that they may work better than changing the c_b value.

Meeting your Milestone:

So far, I have made progress, but have not hit my milestones. One reason I think this could be is because my OS class is taking a large portion of my time, but I am still making time for my research every 1-2 days. Even so, often times, when I am doing research, I find that I end up reading a lot of papers but still not being too sure on how to proceed. I hope that meeting up with my mentor will fix this, though it is definitely my own fault for not being as proactive in reaching out to him.

Surprises:

As mentioned previously, was that the source code was a little bit hard to understand at time. Furthermore, I have had a hard time with some of my other classes, so it has been hard to pace myself for this class.

Revisions to your 07-400 milestones:

I may have to push back my milestones by one or two weeks due to the slow start I have had. Many of the aspects of the YalSAT program are still unclear to me, so I will discuss this further with my mentor.

Resources needed:

I have obtained the source code for my required resources, and will be looking to modify this. On top of this, I may need more powerful computing hardware, but this will be more important later. For now, I can just run the binaries on my local machine or on the Andrew clusters.