January 25th Milestone Report
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Major Changes:
Based on the results, it seems like we have reached a limit in what we can achieve using the frequency predictor method. The method provides benefit within reducing the frequency sum of the seeds. It is unlikely that we will be able to achieve a better benefit using this method, although this work is still ongoing. The focus of this research will possibly shift to optimizing the speed of this method, and possibly exploring multicore and GPU based performance. This is still under discussion.

What You Have Accomplished So Far:
I worked on developing one particular heuristic which we thought showed promise, the bidirectional frequency predictor. I developed multiple versions and iterations and was able to get a successful improvement. The bidirectional predictor did not perform well predicting frequency, but when calculating optimal seeds, it provided a significant boost. I compiled a lot of data and wrote a report for last semester's work.

Meeting Your Milestone:
I met the milestone for this week, and for one heuristic up to March 14th. It is difficult to work out multiple heuristics effectively, as simply developing one took a tremendous of time and lots of optimizations to make it viable. It is unlikely that I will be able to work on multiple heuristics due to time and dearth of viable ideas.

Surprises:
I expected that the frequency predictor would perform much better. But now we are trying to figure out how to improve it by looking at the data.

Revisions to your 15-400 Milestones:
The milestones will change based on the focus of the research. Previously, the focus was on building a heuristic, and ultimately integrating it into a mapper and testing the viability of the mapper. However, this seems a bit too far to go towards. The mapper is the final step in the process, and there needs to be much more work on the effectiveness of the heuristic before it can be properly integrated. Therefore, an avenue of research we are considering is getting high performance from our heuristic. This can be through either achieving good multicore performance on a CPU, exploiting SIMD and vector calculations, or planning a GPU based implementation. Speed is a very critical factor in this area of research, and to increase the accuracy, we sacrificed some speed in the beginning. But this has to be recovered now.

Resources Needed:
I do not need any additional resources at this time.