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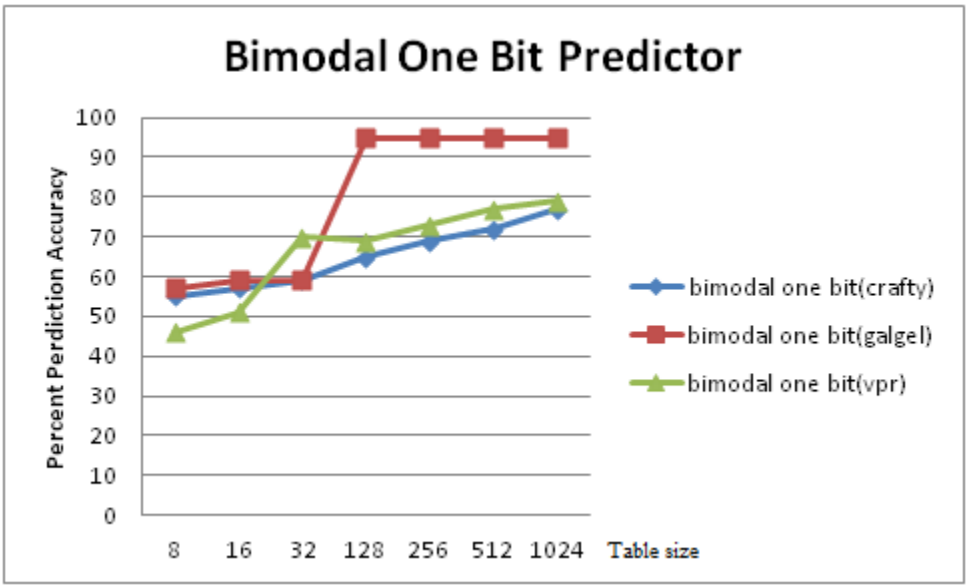
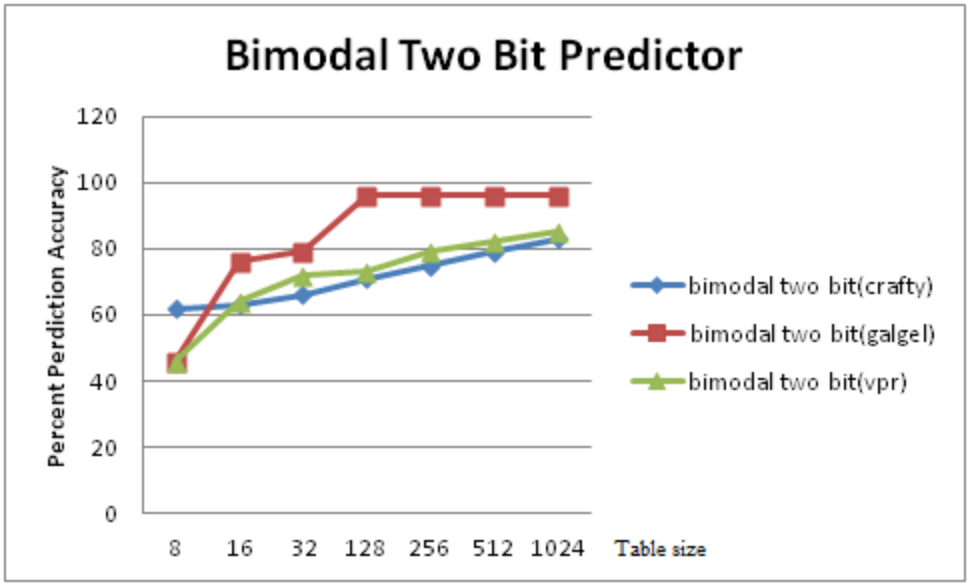
CS 320

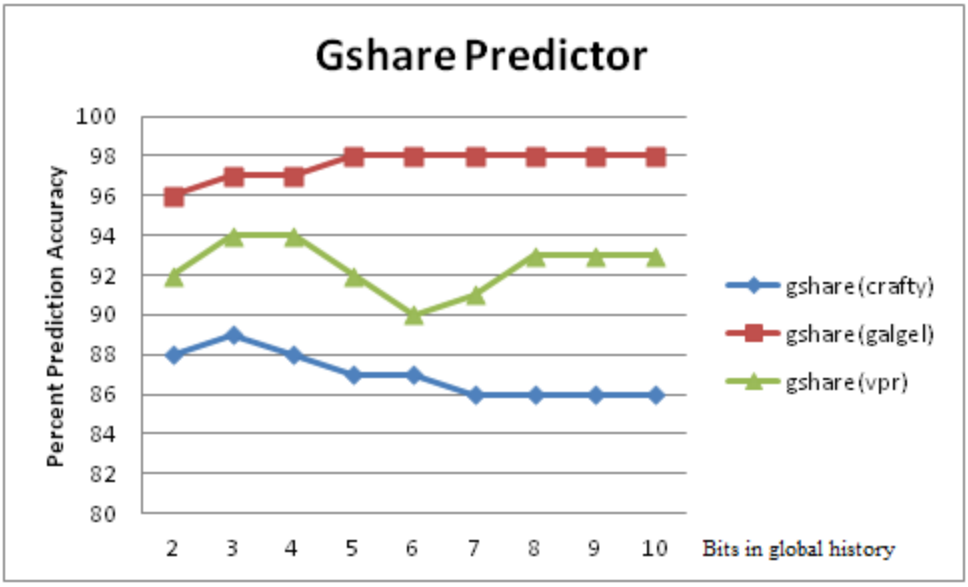
Programming Assignment 1 Report



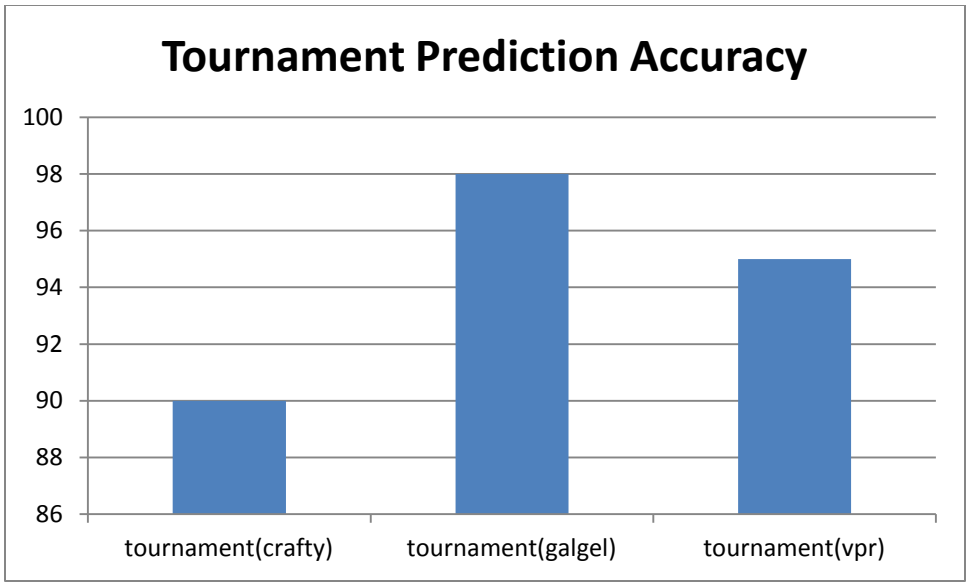
The optimal table size for the one bit bimodal predictor for the galgel and vpr benchmarks seems to be the 1024 entry table, the table size for the crafty benchmark only needs to be 128. The predictor gave the highest prediction rate to the galgel benchmarks. The best table size to use would be 1024, since it gave the highest prediction rate for 2 of the 3 benchmarks, and it is a fairly large increase in accuracy by increasing the table size.



The optimal table size seems to be 1024 for the galgel and the vpr benchmarks, however performance seems to level off when the table size is 128 for the crafty benchmark. The galgel benchmark also received the highest prediction rate from this predictor. The best size for the table should be 1024 because the vpr and crafty benchmarks get the highest prediction rates from that sized table.



The best size for the global history is 2 bits for the crafty and vpr benchmarks, but the best size was 4 for the galgel benchmarks. The best size for this predictor would be 2, because the performance increase for the galgel benchmark was only 1%, but you would be doubling the size of the global history.



The tournament predictor had the highest prediction accuracy of all of the predictors, however it was also the most space and time intensive and the most complex since you had to have the gshare and two bit bimodal predictors running at the same time and actively choosing which of the two was running better for the specific benchmark being run.

Overview

The predictor that gave the best results for all benchmarks was the tournament predictor. The gshare predictor sometimes equaled the tournament predictor's prediction rate, for example the prediction rate for gshare and tournament during the galgel benchmark was both 98%. The gshare predictor was second best, and the optimal configuration for the gshare predictor seemed to be between 2 to 4 bits depending on the benchmark being run, but between the 3 benchmarks given, 2 bits seemed to be the best due to the space complexity being lower, and also there was sometimes a decrease in performance with more bits being used.