

Brent Lee

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ECEC 621

Project 1

2 Bit Local Predictor Results

localPredictorSize	localCounterBits	Deepsjeng Accuracy	Leela Accuracy	Exchange2 Accuracy
2048	1	82.20	78.01	72.23
2048	2	85.87	82.69	82.54
4096	2	86.65	82.81	82.56
8192	2	86.99	83.00	82.57
16384	2	87.06	83.01	82.58
32768	2	87.06	83.01	82.58
65536	2	87.06	83.01	82.58

5.3 Which combination gives you the best performance?

A combination of a 16K local predictor size, and 2 local counter bits yields the best performance. Increasing the predictor size further does not improve the performance.

Tournament Predictor Results

Local History Table Size	Global Predictor Size	Choice Predictor Size	Deepsjeng Accuracy	Leela Accuracy	Exchange2 Accuracy
2048	8192	8192	91.21	84.41	95.45
4096	8192	8192	91.50	84.55	95.47
4096	16384	16384	92.25	85.24	95.68

5.5 Which combination gives you the best performance?

A combination of a 4K local history table size, 16K global predictor size, and 16K choice predictor size yields the best performance.

gShare Predictor Results

Predictor Size	Deepsjeng Accuracy	Leela Accuracy	Exchange2 Accuracy
8192	87.70	79.73	92.82
65536	92.41	81.57	95.01
524288	94.23	87.61	96.28

6.1 Evaluate your gShare predictor and find out the configuration that gives the best performance?

A configuration of a 512K predictor size yields the best performance.

6.2 Compare your gShare predictor against the two-bit local predictor and the tournament predictor. Does your gShare predictor out-perform them?

When there are not any limitations, the gShare predictor yields the best performance, outperforming the two-bit local and tournament predictor. A gShare configuration of 512K produces accuracies higher than any other configuration tested.

However, if there were predictor size limitations, the tournament predictor is the most efficient. In configurations with a predictor sizes of 16K, the tournament predictor yields the best performance. The tournament predictor has better performance than the two-bit across all trace files. Even when the gShare predictor has a predictor size of 64K, the tournament predictor with predictor sizes of 16K performs just as well if not better.