Name: Mingzhe Zhang NUID:001055828

Problem: A multi-thread dynamic method-switching branch predictor

Tool: pin

Expriments: linpack, mostly taken, mostly not taken

Algorithm:

-Predicted Taken

-Predicted Not-Taken

-Backward Taken Forward Not Taken

-Delayed Branch

-bimodal Branch Predictor(default)

-Two-level adaptive Branch Predictor

-history-based predictor

-history-based-offset predictor

If there are higher correction, switch to that kind of prediction

Benchmark: correction means 50% linpack correction+25%taken correction+ 25 not taken correction (different rights because linpack is for more common scenarios but others is a little special)

A+ correction 95%-100%

A correction 90%-95%

1. correction 85%-90%

B+ correction 80%-85%

B correction 75%-80%

1. correction 70%-75%

C+ correction 65%-70%

C correction 60%-65%

D correction under 60%

Reference: J. W. Kwak and C. S. Jhon, "High-performance embedded branch predictor by combining branch direction history and global branch history," in *IET Computers & Digital Techniques*, vol. 2, no. 2, pp. 142-154, March 2008, doi: 10.1049/iet-cdt:20060130.