Simulation Assignment 1

Papers:

Barca – cfg with shadow cache 28.3% speedup, does not increase much with budget

D\_JOLT – uses similar to RDIP structure, builds up with a short and long prefetcher, signature is using an entire queue, not popping out stack when ret is called. 28.9% improvement (can be considered)

Eip – entanglement is the primary idea, uses latency between calls and misses to figure out what is the correct time for prefetching. Provides timely prefetching. (29.5%)(either this or d jolt)

FNL MMA – Andre Seznec’s design to combine 2 prefetchers into one. One does short prefetching, the other does a significantly long prefetching with multiple memory accesses (28.7% speedup)(L1I cache miss rate reduced by 91.8%) (can be a runner up to above 2)

JIP – uses a bouquet of jumpers to try to predict correct lines to fetch- one jumper for direct branches, one for indirect. (not a top candidate)

Mana – microarchitects the predictor – finds the flaws of previous prefetchers, improves them by creating a lookup table of sorts – 26.6% speedup. Plus point is that at lower budgets, performs significantly better (different design, can be an option)

PIPS – scouting mechanism, similar to graphs, does not scale that well. Higher number of scouts could improve, but not much.

TAP – Temporal ancestry predictor, uses ancestry table to keep track of instructions – premise that 80% of instructions used only once, so can be eliminated without effort. Not graphs. 23% speedup, does not perform better in one trace- better on servers, not so good on clients

Q1 – simulate ideas of MANA, EIP and Barca

Q2 - Explain key design of EIP and Barca

Q3 – simulated eip and barca- plot results

Q4 – design space exploration – figure out parameters to change

Q5 – Explain the trend of movement

Q6 -