The State University of New York at Binghamton

Department of Computer Science

CS 520 – Spring 2019

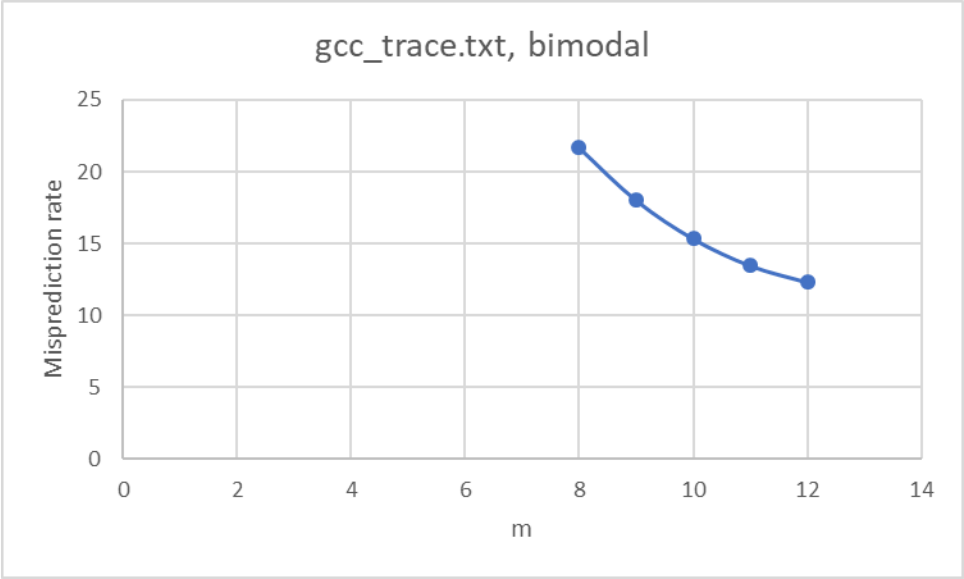
Project #1: Branch Prediction

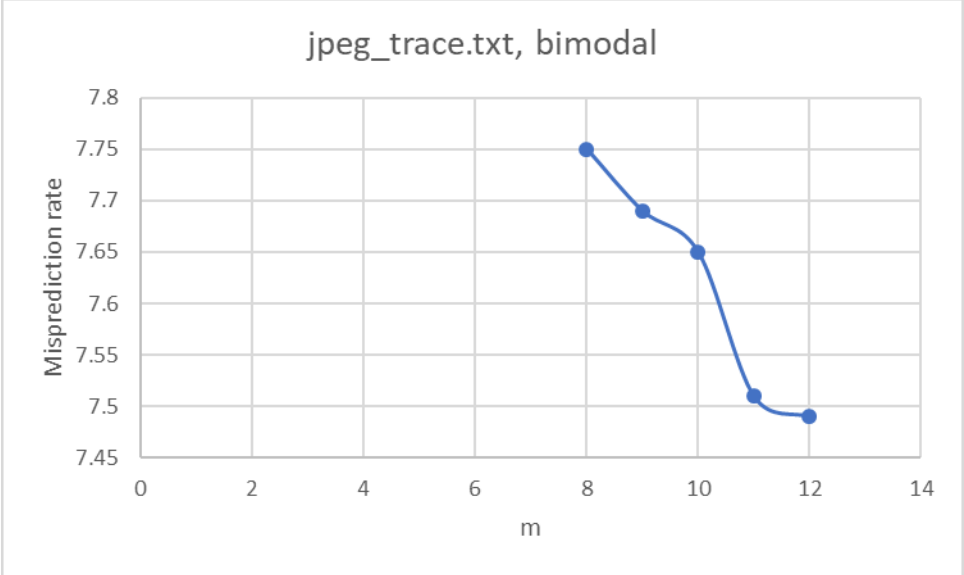
By

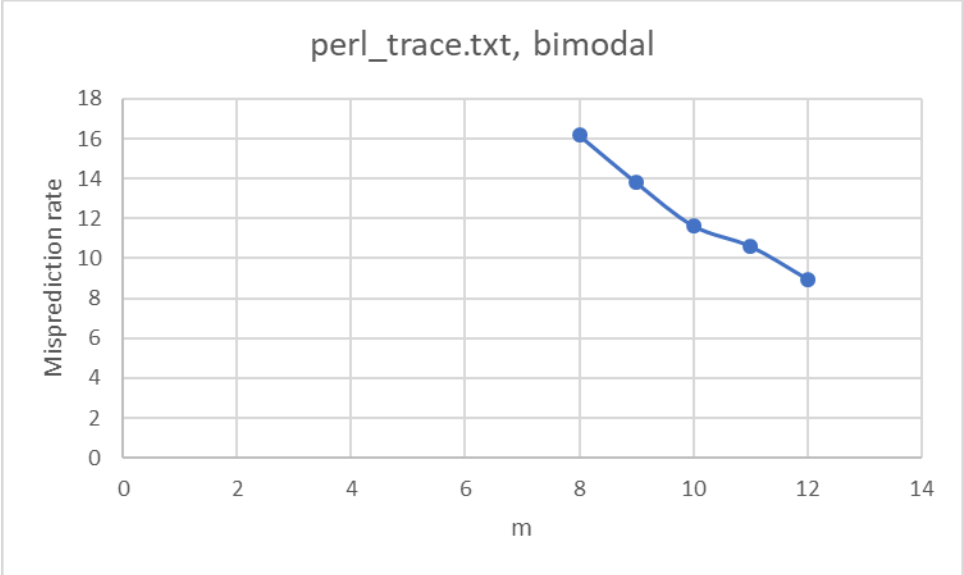
PURVA THAKKAR
(B00743825)

Honor Pledge: I have neither given nor received unauthorized aid on this test or assignment.
Student's electronic signature: Purva Thakkar

1) BIMODAL PREDICTION:







ANALYSIS:

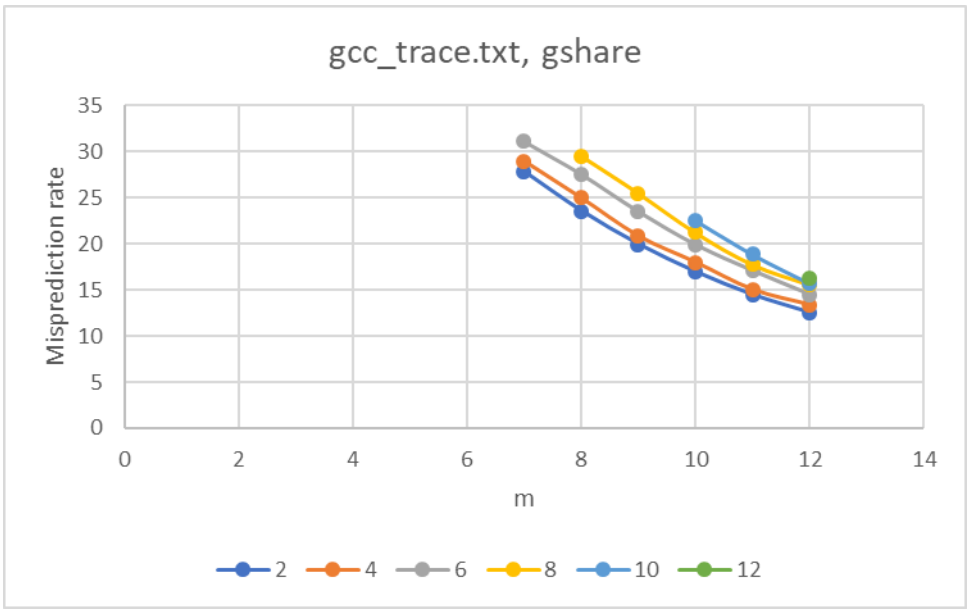
Looking at all the 3 graphs above, we observe that with increasing value of ‘m’, the misprediction rate decreases where represents the number of it’s the predictor uses.

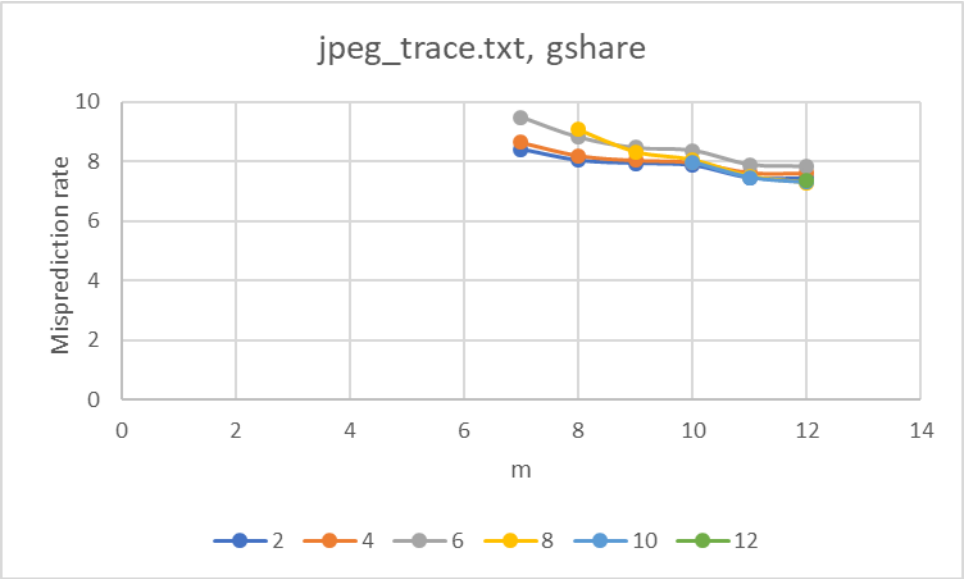
We can see that jpeg_trace.txt has the lowest misprediction rate considering the bimodal prediction followed by perl_trace.txt and then gcc_trace.txt.

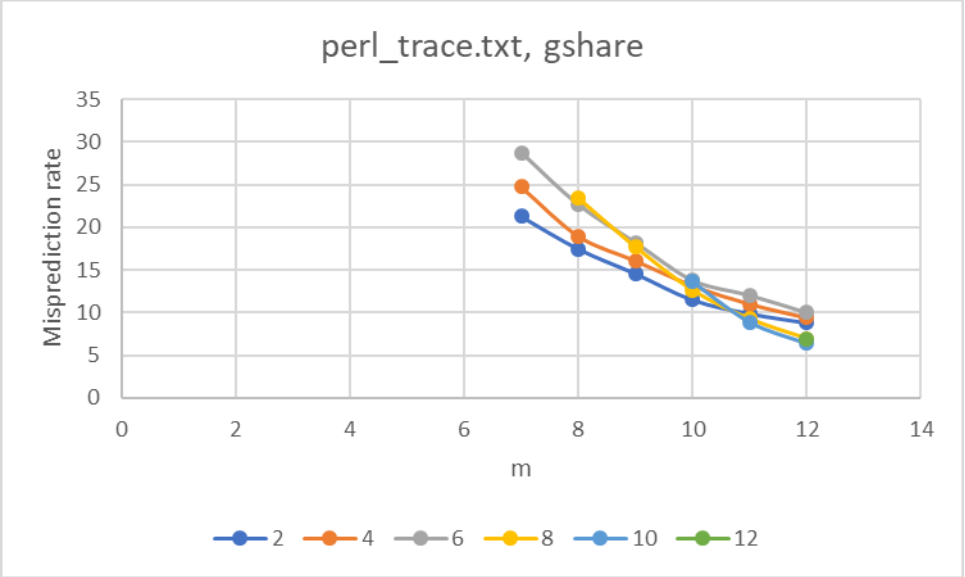
For gcc_trace.txt and jpeg_trace.txt, the misprediction rate decreases slowly with increasing values of m.

For perl_trace.txt, the misprediction rate decreases drastically with increasing values of m.

2) GSHARE PREDICTION:







ANALYSIS:

Looking at all the 3 graphs above, we observe that with increasing value of ‘m’, the misprediction rate decreases but, with increasing value of ‘n’, the misprediction rate increases. Here, ‘m’ represents the number of bits of the predictor.

We can see that jpeg_trace.txt has the lowest misprediction rate considering the gshare prediction followed by perl_trace.txt and then gcc_trace.txt.

For gcc_trace.txt and jpeg_trace.txt, the misprediction rate decreases as the value of m increases and the misprediction rate increases with increasing values of n the only difference being is that for jpeg_trace.txt, the values fall under shorter range.

For perl_trace.txt, the misprediction rate increases with increase values of n and decreases with increasing values of m but, for some values m, the misprediction rate falls drastically.